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AFCRL-64-964

WORLDWIDE COLLECTION AND EVALUATION  
OF EARTHQUAKE DATA

EVALUATION OF 1963 SEISMICITY

By

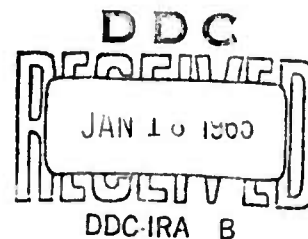
Ray Fisher, Ralph Guidroz and Research Staff

TEXAS INSTRUMENTS INCORPORATED  
P. O. Box 5621  
Dallas, Texas

Contract No. AF 19(604)-8517  
Date of Contract: 15 May 1961  
Contract Expiration Date: 15 November 1964  
Project 8652  
Task 865207

FINAL REPORT

18 November 1964



Prepared For

AIR FORCE CAMBRIDGE RESEARCH LABORATORIES  
OFFICE OF AEROSPACE RESEARCH  
UNITED STATES AIR FORCE  
BEDFORD, MASSACHUSETTS

WORK SPONSORED BY ADVANCED RESEARCH PROJECTS AGENCY

PROJECT VELA UNIFORM

ARPA Order No. 292, Amendment No. 7, dated 25 March 1963  
Project Code No. 3810, Task 2

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## SYNOPSIS

Texas Instruments Incorporated has been engaged in studies of seismicity and related fields for approximately three years. The purpose of this study was to obtain a quantitative estimate of the low-magnitude seismicity which constitutes noise in a seismic monitoring system used for the detection and identification of nuclear explosions. This research effort, which began in May, 1961 under Contract AF 19(604)-8517, was sponsored by the Air Force Cambridge Research Laboratories (AFCRL) as part of the Advanced Research Projects Agency (ARPA) Project VELA UNIFORM.

Since the inception of this effort, many contributions have been made toward the understanding of seismicity and seismology in general. In this Final Report little purpose would be served by repeating verbatim what has been published in previous Semiannual or Special Reports; however, for readers interested in such detail, an annotated bibliography is provided in Appendix B.

The primary objective of this report is to evaluate and document seismic activity that occurred in 1963. The following is a synopsis of major results of this effort.

### A. SEISMICITY

#### 1. General

It is apparent from the 1960 and 1963 studies that several gaps appeared in the worldwide coverage of earthquakes. The capabilities of some of the standard stations were limited to such extent that there was insufficient areal coverage. In several regions of the earth it is doubtful that many earthquakes of magnitude 4.5 ( $m_b$ ) were recorded by a sufficient number of stations to permit complete evaluation, while many events of magnitude less than 4 likely went undetected.

Additional factors must be considered in identifying events which have occurred in known seismic areas. Relatively remote, sparsely populated areas where earthquakes of magnitude 3 or 4 may occur should be treated as highly suspicious areas with regard to clandestine testing of nuclear devices. All the northwestern quarter of China is, in this sense, a suspicious area; indeed, it was in this area that the Communist Chinese detonated their first nuclear device. The European and Central Asian seismic zones of the USSR are relatively densely populated and are near many stations outside the USSR; however, along the border between the USSR, China and Mongolia lie areas of poorly defined seismicity. An event of magnitude less than 4 anywhere in this region may be expected. Relatively few

stations outside the USSR and China or within their political influences are capable of recording events of magnitude 4 within the adjacent Chinese territory. The same may be said of the Northeastern Siberia area within the Arctic seismic belt.

Kamchatka must not be overlooked as a potential test site; while closer than the other areas to good stations outside the USSR, it is still quite distant from sensitive stations in Japan, Alaska and Canada. The high recurrence frequency of earthquakes in the magnitude-4 range compounds the problem of identification of nuclear explosions since criteria for discrimination must be applied to a large number of events.

## 2. Magnitude

The following observations are apparent from the study of magnitudes:

a. Magnitudes as presently calculated require several corrections which are not very well determined. For example, empirical studies indicate a large variation of amplitude with azimuth.

b. Magnitudes determined from P-waves are influenced by instrument type. For teleseisms, short-period instruments generally yield magnitudes about one unit less than long-period instruments.

c. Magnitudes calculated for events at shadow-zone distances frequently are much too high in comparison with those calculated for events at teleseismic distances. The implication is that the  $A_2$  curve has values too high for some regions of the earth.

d. The apparently anomalous relationship between the  $m_b$  scale, recently adopted by the USC&GS and AFTAC, and the widely used Richter scale,  $M$ , may be explained by the different rules for measuring P-amplitudes by instrument band-pass characteristics and by possible shadow-zone effects. At approximately 16 degrees  $\Delta$  and greater the relationship between  $m_b$  and  $M_S$  becomes approximately  $M_S = m_b + 0.8$ .

## B. NOISE STUDIES

### 1. Visual Methods

Digitized noise spectra were compared with visual evaluation of the noise. It was concluded that a visual evaluation will yield a measure of the average peak amplitudes as seen by the observer and cannot be directly related to the amplitude or energy density content of the noise record.

Therefore, visual analysis should be limited to estimating expected noise which will be the most obvious and possibly the most disturbing to the observer, e.g., small high-frequency oscillations.

Conclusions from visual interpretation of noise based on 1960 and 1963 data were difficult due to the scarcity of information. The study indicated, however, that (1) areas of low microseisms over continents and high microseisms over oceans showed seasonal variation, (2) two- to ten-second microseisms are strongest in the winter months and are probably generated by oceanic storms, and (3) storm-generated microseisms are strongly attenuated at continental margins.

## 2. Polarity Method

Experiments have revealed that the most practical method of obtaining relative noise-power density spectra from film recordings is by polarity processing. Distortion of the spectra can be predicted and corrective procedures applied when using the polarity method. This method has been demonstrated to be both theoretically sound and experimentally verifiable.

From a study of noise spectra obtained from 1963 recordings it was observed that near 1 cps the slope (db/octave) on the average changed from approximately 25 db/octave to 90 db/octave or 45 db/octave. The steeper noise spectral slope may be associated with local movement of fronts; whereas the intermediate slope may be associated with storms.

## C. EARTHQUAKE STUDIES.

Several fault-plane solutions were attempted using the P-polarity method. Although these events show few P-polarities which are inconsistent with the solution, little confidence can be placed in any tentative solution as all solutions contain some nodal figures which were arbitrarily drawn; the data will allow other configurations. Use of S-data has permitted the exclusion of some possibilities in fault-plane orientation as well as exclusion of certain mechanism types.

Attenuation patterns in the vicinity of nodal lines were evaluated for a few events. The calculated magnitude in the vicinity of the nodal surface in one example was found to be about one unit lower than that in a location far removed from the nodal surface.

Two distinctly different polarity and attenuation patterns were found in studying a suite of Kurile Islands shocks; however, similar polarity patterns yielded similar attenuation patterns. It has been suggested that identification of the polarity patterns from attenuation data recorded at a

limited number of stations may be practical. Before this can be accomplished, however, much more research must be conducted to resolve problems concerning regional travel times and phase attenuations.

# WORLDWIDE SEISMICITY, 1963

## SECTION I

### DEFINITION AND SUMMARY

#### A. OBJECTIVES

Annual numbers of earthquakes which might be confused with nuclear explosions are of great importance to VELA UNIFORM. Providing additional data for estimating such numbers is the primary objective of this study.

Prior to the publication of the report on worldwide seismicity in 1960, little was known of seismic activity below  $M_S = 6.0$  on a worldwide basis. That report succeeded in extending knowledge of seismicity down to  $M_S = 5.0$ . However, the 1960 report showed, as was generally known, that seismic activity is subject to sometimes extreme variations from year to year. Hence, the apparent necessity for a more extended seismicity study resulted in this 1963 study.

Using nearly the same methods developed and standardized in the 1960 study, the following objectives were set:

- Documentation of seismic activity during 1963
- Comparison with seismicity in 1960 and other years
- Definition of areas having unusual activity in 1963
- Estimation of seismic activity in magnitude ranges and geographical areas of primary interest to VELA UNIFORM

In addition to studies performed in the 1960 effort, magnitudes on the USC&GS scale ( $m_b$ ) were calculated. Thus, 1963 seismicity data are available for the same time period, same events and from the same suite of stations based upon both the old and the new magnitude scales, and the results are compared.

It was also necessary to ascertain the capabilities of the suite of stations to record seismic activity. These capabilities were determined from the calculation of theoretical limits of perceptibility and the results obtained were used in estimating the lowest magnitude for which worldwide data may be considered complete.

## B. METHODS

Little change has been effected in the methods employed in the 1960 study. (The major change has been mentioned, i.e., the addition of the  $m_b$  calculation.) Data reduced from the USC&GS Standard Stations and three of the Canadian seismograph stations are summarized in Table I. All amplitudes are  $\frac{\text{peak-trough}}{2}$ .

TABLE I  
PHASES ANALYZED FOR 1963 DATA

Phase	Definitions and Remarks	Measured On:
PU	Maximum A/T in first few cycles of P	SPZ only
P	Maximum A/T in P group	SPZ, LPZ
PP	Maximum A/T, when P not observed	SPZ, LPZ
S	Maximum A/T	All components
R	Maximum A of surface waves, $T = 20$	LPZ, SPZ
L	Maximum A of surface waves, $T = 20$	LPN& E, SPN& E
MZ	Maximum A& T of surface waves, $17 \leq T \leq 23, T \neq 20$	LPZ, SPZ
MH	Maximum A& T of surface waves, $17 \leq T \leq 23, T \neq 20$	LPN& E, SPN& E

These data are recorded on analysis sheets from which IBM data cards are punched. One header card containing information about the event and one or more phase cards containing trace measurements are punched for each station event. These cards serve as input to a five-stage computer program employing an IBM 1401 for the first and last stages and an IBM 7094 for the remaining stages.

The first stage of the program is a pre-edit routine which checks all cards for completeness and disallowed entries and transfers the correct data to magnetic tape. Data in the input tapes are listed by station. In the second stage of the program, trace measurements are converted to ground motion in microns using a library of response curves for the instruments at each station. In the next stage, magnitudes are computed and a set of statistics are developed for each magnitude method and each station. Magnitudes calculated and methods employed are shown in Table II. Statistics



TABLE II

## MAGNITUDE CALCULATION DATA

METHOD	EQUATION	INPUT	RESTRICTIONS	SOURCE
USC&GS $m_b$	$m_b = \log \frac{A}{T} + A_2$	$\frac{A}{T}$ for Pu phase in $\mu/\text{sec}$ $A_2$ = depth-distance factors for P phase	$2^\circ \leq \Delta \leq 110^\circ, h = 0$ $5^\circ \leq \Delta \leq 110^\circ, 0 \leq h \leq 700 \text{ km}$	USC&GS (1963)
Max. P	$M = 1.59 \left( \log \frac{A}{T} - 2.5 + A_2 \right)$	$\frac{A}{T}$ for P phase in $\mu/\text{sec}$ $A_2$ = depth-distance factors for P phase	$1^\circ \leq \Delta \leq 110^\circ, h \leq 200 \text{ km}$ $5^\circ \leq \Delta \leq 110^\circ, h > 200 \text{ km}$	Richter (1958)
PP	$M = 1.59 \left( \log \frac{A}{T} - 2.5 + A_4 \right)$	$\frac{A}{T}$ for PP phase in $\mu/\text{sec}$ $A_4$ = depth-distance factors for PP phase	$25^\circ \leq \Delta \leq 180^\circ$	Richter (1958)
S	$M = 1.59 \left( \log \frac{A}{T} - 2.5 + A_3 \right)$	$\frac{A}{T}$ for SH phase in $\mu/\text{sec}$ . A is vector amplitude if recorded on both components of horizontal set (SPN&E, LPN&E) $A_3$ = depth-distance factors for SH	$10^\circ \leq \Delta \leq 110^\circ, h \leq 175 \text{ km}$ $1^\circ \leq \Delta \leq 110^\circ, h > 175 \text{ km}$	Richter (1958)
Vertical component surface waves, $T = 20$	$M = 0.8 (\log A_{20} - \log B + 0.0082 h + M_R)$ $M = 0.5 (\log A_{20} - \log B + 0.0082 h + M_R)$ $M = 0.5 (\log A_{20} - \log B + 0.85 + M_R)$	$A_{20}$ in $\mu$ for R phase $\log B = f(\Delta)$ $M_R$ = path correction	$20^\circ \leq \Delta \leq 180^\circ, h \leq 40 \text{ km}$ $20^\circ \leq \Delta \leq 180^\circ, 40 < h \leq 100 \text{ km}$ $20^\circ \leq \Delta \leq 180^\circ, 100 < h \leq 300 \text{ km}$	Bath (1952)
Horizontal component surface waves, $T = 20$	$M = \log A_{20} - \log B$	A in $\mu$ for L phase, A is vector amplitude if recorded on both horizontal components of matched set.	$20^\circ \leq \Delta \leq 180^\circ, h \leq 35 \text{ km}$	Richter (1958)
Vertical component surface waves, $17 \leq T \leq 23$ , $T \neq 20$	Same as R except $\log A_{20} = \log A_T + \frac{1}{2} \log \frac{20}{T} + 24.13$ $(K_T - K_{20}) \Delta$	$A_T$ for MZ in $\mu$ , and T in sec $\log B = f(\Delta)$ $K_T, K_{20}$ = extinction coefficients for T and T = 20	Same as R	Bath (1952)
Horizontal component surface waves, $17 \leq T \leq 23$ , $T \neq 20$	Same as L except $\log A_{20} = \log A_T + \frac{1}{2} \log \frac{20}{T} + 24.13$ $(K_T - K_{20}) \Delta$	Vector amplitude of MH or single amp for MH in $\mu$ , T in sec $\log B = f(\Delta)$ $K_T, K_{20}$ = extinction coefficients for T and T = 20	Same as L	Bath (1952)

accumulated for each method of magnitude determination are:

ALPHA	Average difference between calculated and published magnitudes
BETA	Standard deviation of ALPHA
GAMMA	Maximum algebraic value of ALPHA
SIGMA	Minimum algebraic value of ALPHA
ETA	Number of times each method has been compared to published values

The values of ALPHA are corrections which are added to each magnitude for  $\Delta > 16^\circ$  except for  $m_b$ . In the case of  $m_b$ , the uncorrected value is retained and another  $m_b$  is derived which has the correction applied at all distances. Weights based upon these statistics are assigned each method. In general, these weights are unity except where the statistics show general unreliability of the method. Also, surface-wave magnitudes computed from short-period instrument data are weighted less due to the decreased reliability of instrument response data at longer periods.

Using these weights and corrections, magnitudes for each event at each station are averaged in the fourth stage as follows:

$\overline{M}_P$	=	mean of corrected short- and long-period maximum P-magnitudes, or if P not recorded,
$\overline{M}_{PP}$	=	mean of correct short- and long-period PP magnitudes.
$\overline{M}_{SH}$	=	mean of long- and short-period SH magnitudes,
$\overline{M}_{LR}$	=	weighted average of corrected surface wave magnitudes.

The values of the USC&GS unified magnitude ( $m_b$ ) are kept separate from these magnitudes throughout the program. The final magnitudes calculated for each event at each station consist of  $\overline{M}_S$ , (the mean of  $\overline{M}_P$ ,  $\overline{M}_{SH}$  and  $\overline{M}_{LR}$ ),  $m_b$  and corrected  $m_b$ .

In the final stage of the program all values of  $\overline{M}_S$ ,  $m_b$  and corrected  $m_b$  are averaged for the same events. These are the calculated magnitudes shown in the event list found in Appendix A.

In this report, seismicity is defined as the annual number of earthquakes per unit area, in the magnitude ranges  $5.0 \leq M_S < 6.0$ . The unit area chosen is approximately the size of a five-degree grid on the earth's surface at the equator (about  $3 \times 10^5$  square kilometers). The procedure followed is to divide the earth along each five degrees of longitude, starting at the prime meridian, and in latitude, north and south of the equator at 5, 10, 15, 20, 25, 30.5, 36, 42, 49, 57, and 67 degrees. The number of earthquakes in the magnitude ranges  $5.0 \leq M_S < 6.0$  which lie in each of the nearly equal 1728 unit areas are counted. On the seismicity map the number counted is placed within the unit area and contours drawn to delineate different levels of seismicity.

Various epicenter maps, showing the geographical distribution of earthquakes in 1963, are drawn. Two maps are drawn for earthquakes of magnitude  $M_S \geq 4.0$  — one for shallow and normal depth foci and another for intermediate and deep earthquakes. A similar set of two maps are drawn for events of  $m_b \geq 4.0$ . Magnitude ranges indicated are 4.0 to 5.0, 5.0 to 6.0 and greater than 6.0 for both  $M_S$  and  $m_b$ . Deep focus earthquakes are differentiated from intermediate by showing intermediate depth events as open circles and deep as closed circles.

### C. SUMMARY OF OBSERVATIONS

Data were reduced and processed from the records of 72 seismograph stations in 1963. All but three of the stations were part of the USC&GS Worldwide Standard Station Network. The other three stations were part of the Canadian seismograph station network and were located in the Canadian Arctic.

Based upon the investigations undertaken in this study, plus search of available bulletins for additional epicenter locations, it was determined that about 11,600 events were recorded during 1963. About 4800 events are listed in Appendix A representing the known epicenter locations in 1963. Worldwide data are considered complete above magnitude 5.0 ( $m_b$  and  $M_S$ ). Numbers of shocks  $M_S \geq 5.0$  were:

	Shallow ( $h \leq 70$ km)	Intermediate ( $70$ km $< h < 300$ km)	Deep ( $h > 300$ km)
$5.0 < M_S < 6.0$	1000	239	95
$6.0 \leq M_S < 7.0$	158	26	11
$7.0 \leq M_S < 7\text{-}3/4$	8	1	1
$M_S \geq 7\text{-}3/4$	<u>0</u>	<u>1</u>	<u>0</u>
Total	1166	267	107

These data give relationships between number and magnitude as follows:

- (1) Shallow —  $\log N = 8.00 - 0.96 M_S$ ,
- (2) Intermediate —  $\log N = 8.14 - 1.11 M_S$ , and
- (3) Deep —  $\log N = 6.70 - 0.92 M_S$ .

The circum-Pacific belt accounted for about 76, 85 and 93 percent of shallow, intermediate and deep focus activity ( $M_S \geq 5.0$ ) in 1963.

The remainder of the deep focus shocks were located in the Sunda arc. Most of the activity outside the circum-Pacific belt was located in the Alpide, although the oceanic ridges and rises were rather well defined by shallow seismic activity.

The southern Kurile Islands were the most active single area in 1963, although the Kermadec-Tonga Islands area had the greatest amount of intermediate and deep-focus shocks. Besides the Kurile-Kamchatka area, activity in the USSR was located east of the Caspian Sea along the border with Iran, in the Caucasus Mountains and in Central Asia near the Hindu Kush.

Activity in southern Chile was lower than in 1960 by a considerable margin, after less than three years following the onset of the great earthquake swarm of 1960.

#### D. PRINCIPAL CONCLUSIONS

In 1963 the numbers of shallow earthquakes  $M_S \geq 6.0$  were about the same as the mean annual numbers given by Gutenberg and Richter (1954) while more shocks in the range  $5.0 < M_S < 6.0$  were recorded than predicted by Gutenberg and Richter. In comparison to 1960, seismic activity was quite low, mostly due to the reduction in activity in southern Chile.

However, in most regions fewer shallow shocks were observed in 1963 than in 1960. Two exceptions were the Kurile and Aleutian Islands, particularly the former.

Activity at depths deeper than normal was considerably increased over 1960. Part of this increase may be only apparent since hypocenter determination has been improved over that in 1960 due to the greater number of high-quality stations and use of electronic computer capabilities in processing seismic data.

Analysis of 1963 seismicity, plus reference to the 1960 study and other works in seismicity, enable a worldwide system of fault traces to be sketched. These tectonic features outline continental and oceanic stable areas.

Comparison of statistics based on  $M_S$  and  $m_b$  shows apparent inconsistencies from region to region, related to the proximity of seismograph stations to active zones. Somewhere between 15 and 20 degrees distance, the relationship between  $m_b$  and  $M_S$  becomes approximately  $M_S = m_b + 0.8$ . At distances less than about 15 degrees, a different relationship (one very near Richter's  $m = 0.63 M_S + 2.5$ ) seems to hold.

Lack of consistent results in relating the two scales and in comparing  $m_b$  data from region to region, compounds the problem of estimating the numbers of shallow shocks which might be confused with nuclear explosions in the USSR and China. Estimates of annual numbers of expected shallow earthquakes  $4.0 \leq M_S < 5.0$  can be made, however. These estimates are: Kuriles and Kamchatka — 1500; other USSR activity — 50; China — 100. The estimated worldwide shallow earthquakes ( $4.0 \leq M_S < 5.0$ ) was 9000.

#### E. RECOMMENDATIONS

Seismicity studies should be continued, with emphasis placed on the accumulation of statistics on smaller shocks ( $M_S < 6.0$ ). The work of Gutenberg and Richter (1954) essentially established the trends in the geographical distribution of seismic activity. However, their studies were based on data for large shocks only, and activity in the magnitude range of interest to VELA UNIFORM was inferred from statistics of much larger magnitudes. The studies of 1960 and 1963 seismicity extended the range of knowledge down to  $M_S = 5.0$  and showed that the estimates of Gutenberg and Richter for annual numbers of earthquakes in the range  $5.0 \leq M_S < 6.0$  were probably too low. Only the accumulation of more statistics can substantiate this conclusion.

Use of the unified magnitude scale  $m_b$ , based upon the maximum amplitude of P or  $P_n$  within the first few cycles, began with VELA UNIFORM stations in 1962 and became widespread only with the adoption of the scale in early 1963 by the USC&GS. Considerable difficulty was encountered in relating the new scale to the Richter magnitude  $M_S$ , although it was found that a relationship of the type ( $m_b = M_S + \text{constant}$ ) fit the data as well as any (VESIAC Magnitude Conference, April, 1963). Most of the  $m_b$  magnitudes were based on teleseismic recordings. This 1963 seismicity study also shows such a relationship is valid for teleseismic recordings. However, at closer distances the two scales do not appear to relate in this manner. Consequently, it is recommended that continued study of the relationship between  $m_b$  and  $M_S$  be made, emphasizing the dependence, if any, upon distance. Study of amplitude variations as a function of distance should be an integral part of such studies.

VELA UNIFORM is particularly interested in the seismicity of USSR and China, and more specifically, in determining the expected annual numbers of earthquakes in these areas which might be confused with nuclear explosions. In addition, the precise determination of the locations where this activity may be expected to occur is of considerable importance. In order to satisfy these needs more adequately than is currently possible, two recommendations are offered:

- (1) The establishment of more high-quality seismograph stations, with the capability of monitoring seismic activity down to magnitude 4.0 in USSR and China, distributed so as to improve the azimuthal coverage of these areas, and
- (2) Continued improvement in techniques for determining earthquake hypocenters, employing maximum use of computer technology and including recent developments in the understanding of the earth's crust and upper mantle variations. Along with this, confidence limits should be established on the hypocenters to provide estimates of the precision of locations.

## SECTION II

### PRESENTATION OF DATA

#### A. WORLDWIDE RESULTS

The 1963 seismicity was, as is usual, concentrated in the circum-Pacific belt. Of those earthquakes for which  $M \geq 5.0$ , 76 per cent of the shallow, 85 per cent of the intermediate and 93 per cent of the deep focus shocks were located in the circum-Pacific seismic belt. Other seismic activity occurred in the Alpide zone (principally in the Eastern Mediterranean, Hindu Kush to the western Himalayas, southern Sumatra and eastern Java, and the eastern extremity of the Sunda arc), in the Caribbean loop and along most of the oceanic ridges and rises.

Figures 1 through 5 illustrate the geographical distribution of seismic activity in 1963. Figures 1 and 2 show plots of epicenters for which  $M_S \geq 4.0$ . Epicenters in Figure 1 are only for shallow and normal focus shocks ( $h \leq 70$  km) while epicenters in Figure 2 are for both intermediate ( $70 \text{ km} < h \leq 300$  km) and deep-focus ( $h > 300$  km) earthquakes. Figures 3 and 4 parallel Figures 1 and 2 in content, except that in these figures, epicenters are shown for which  $m_b \geq 4.0$ . Figure 5 is a seismicity map which shows annual numbers of earthquakes per unit area in the magnitude range  $5.0 \leq M < 6.0$ . The unit area chosen is approximately the size of a 5-degree grid, or  $3 \times 10^5$  square kilometers.

Several features of 1963 seismicity, as illustrated in Figures 1 through 5, are of particular interest. These are:

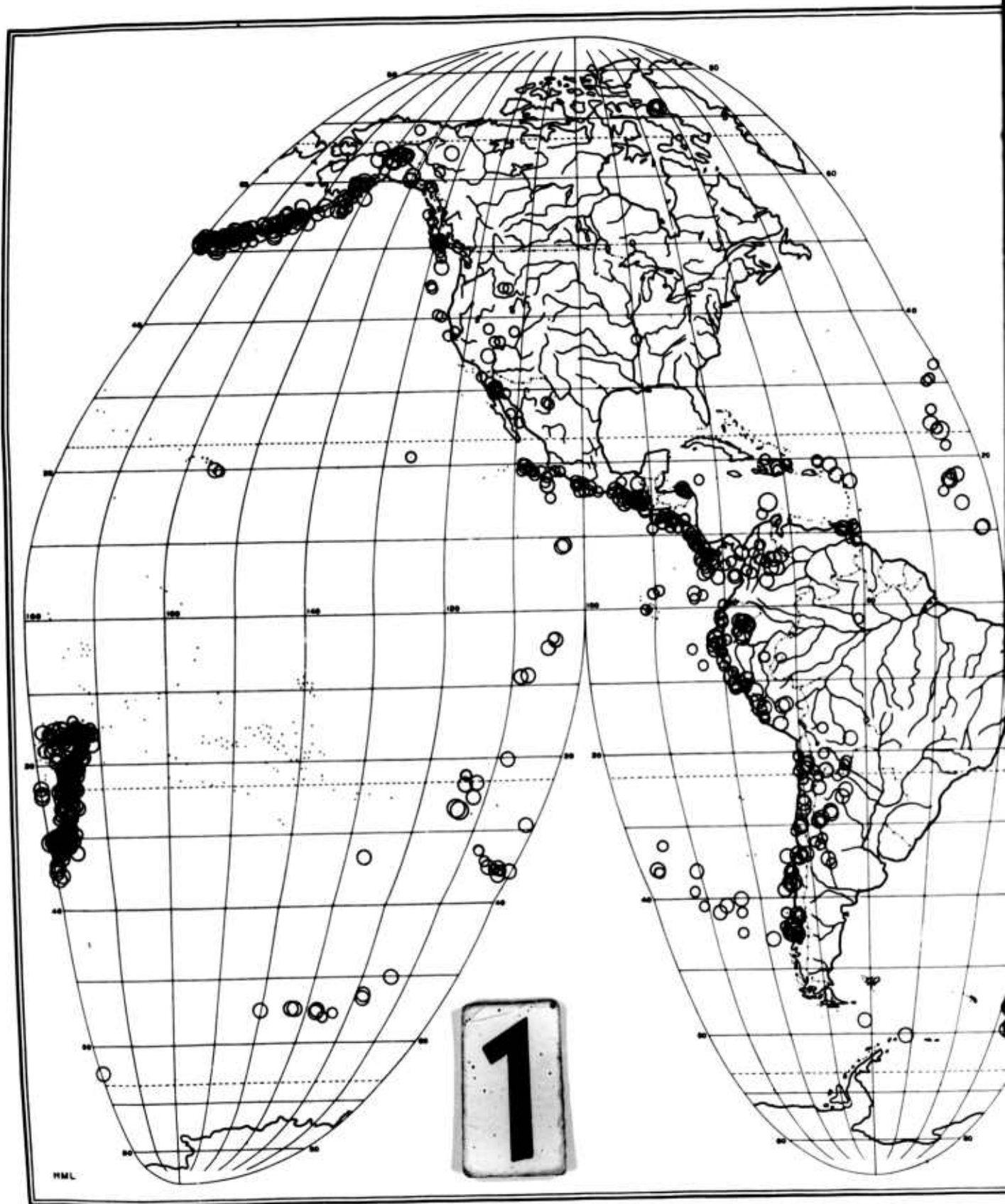
- (1) The earthquake swarm in the Kurile Islands which began 12 October. Several minor swarms occurred earlier in the year, such as in June and July, and may have been heralding the onset of the major activity.
- (2) The clear delineation of oceanic ridges and rises by seismic activity. The mid-Atlantic ridge is well outlined by earthquake epicenters, as are the ridge systems in the Indian Ocean and the Southeastern Pacific.
- (3) The return of activity in southern Chile to near that level existing before the great earthquake swarm of 1960.
- (4) Somewhat increased activity along the southern USSR border in the vicinity of the Caucasus Mountains and in the Kopet-Dag region.

- (5) Greatly increased intermediate depth activity in the Banda Sea-Molucca Passage area. The only "class a" ( $M > 7\frac{3}{4}$ ) earthquake recorded in 1963 (magnitude 8.2), coordinates 6.8 S; 129.6 E; depth, 80 km; date, 4 November; 01:17:09 GCT was located in this area.

A more detailed analysis of the geographical distribution of seismic activity as pictured in the first five figures, plus consultation of similar data for 1960 seismic activity, reveals a clear pattern of stable areas surrounded by zones of varying seismicity levels. By tracing these seismic zones and extrapolating some of their trends, the major tectonic features of the earth or global zones of maximum stress may be defined. Beginning at a point just off the east coast of Kamchatka at about 65 degrees north, a fault system may be traced through the Komandorskie Islands along the Aleutian Island arc extending up the Alaska peninsula and the Aleutian range to about the Arctic Circle north of Fairbanks (this may extend on to the northern coast of Alaska) where a sharp turn to the southeast may be traced. From this point, the tectonic system trends along the coast and then just off the Alexander archipelago to the Queen Charlotte Islands, where a lesser zone branches off to Vancouver Island (and possibly connects to the activity in Montana-Wyoming-Utah area across Idaho), while the main branch parallels the Washington and Oregon coasts, some 400 or 500 kilometers off shore, to about 45 degrees latitude north, where it curves back to the California coast at about the point where the San Andreas fault disappears into the ocean. After reaching the coast, the fault system follows along the coast ranges into southern California where an intersection is made with a fault system trending along the strike of the Sierra Nevadas (this may be connected with the branch through Vancouver Island, thus forming a loop about a small stable area in western Oregon) and continuing down to and through the Gulf of California, then south along the 110th west meridian to the Revilla Gigedo Islands, where another turn (approximately 90 degrees) in the trace leads to an intersection with the Jalisco, Mexico coast.

Just off the coast at this point another branch occurs. The main branch continues along the coasts of Mexico and Central America while the other branch trends generally south to about the equator and then curves to the southwest toward Easter Island. The main branch continues along the Central America coast to the Peninsula de Azuero, where it leaves the Panama coast and continues in a southerly direction to about 5 degrees north latitude and turns sharply to the east. From this point, yet another branch extends westward to the Galapagos Islands (this branch may connect with the Easter Island-to-Revilla Gigedo Islands branch).





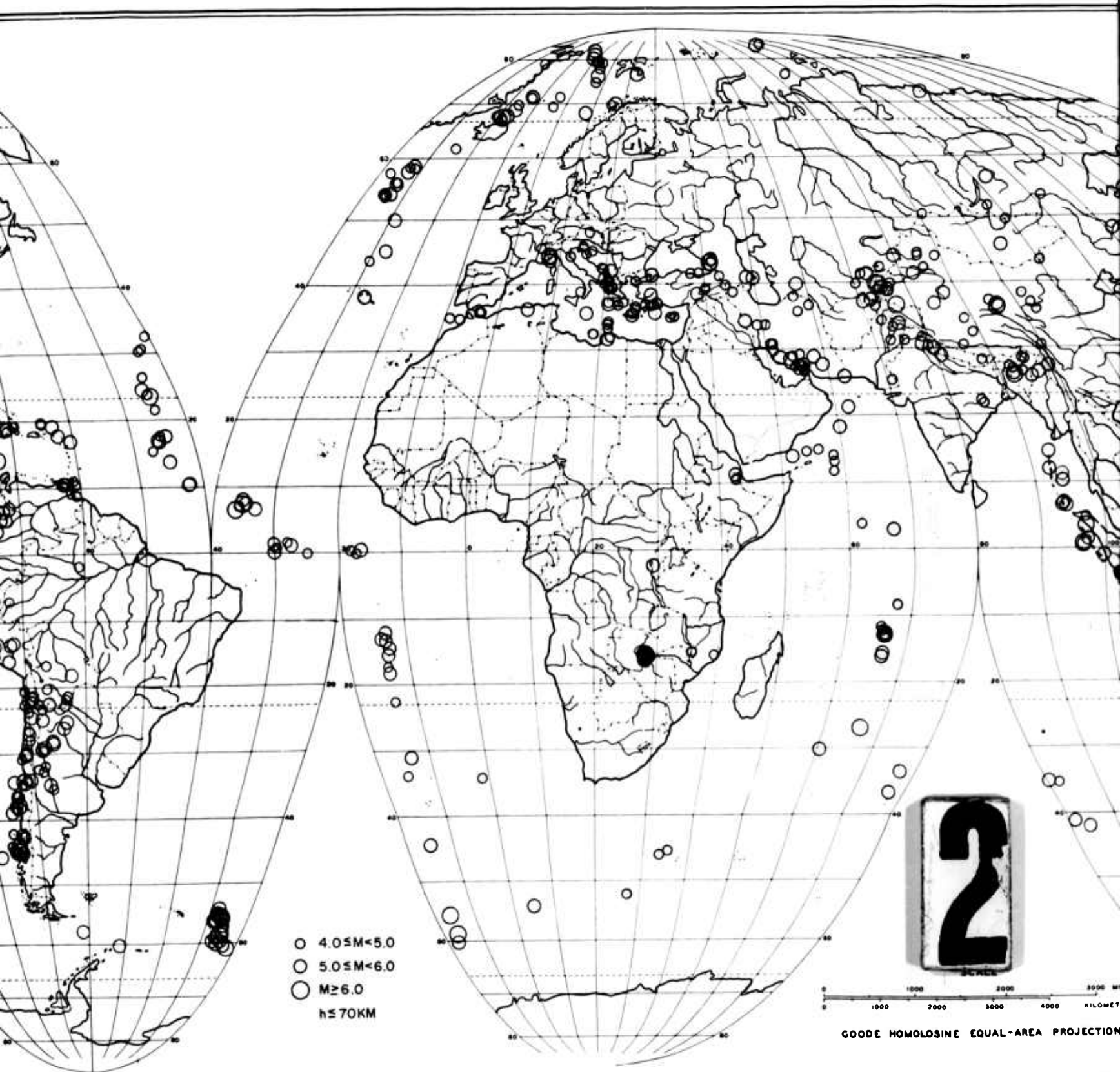


Figure 1. Earthquake Epicenters, 1964-1968

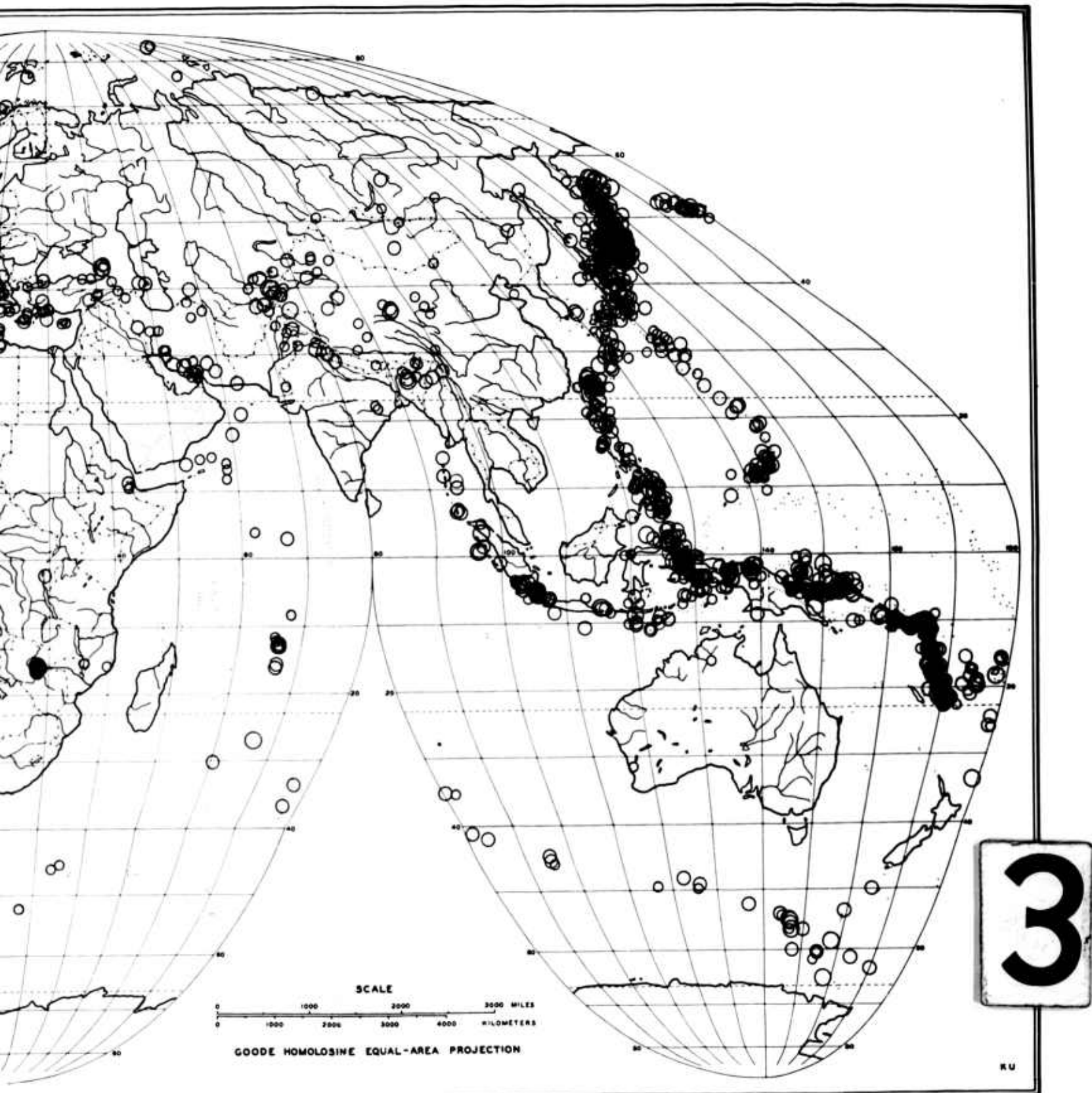
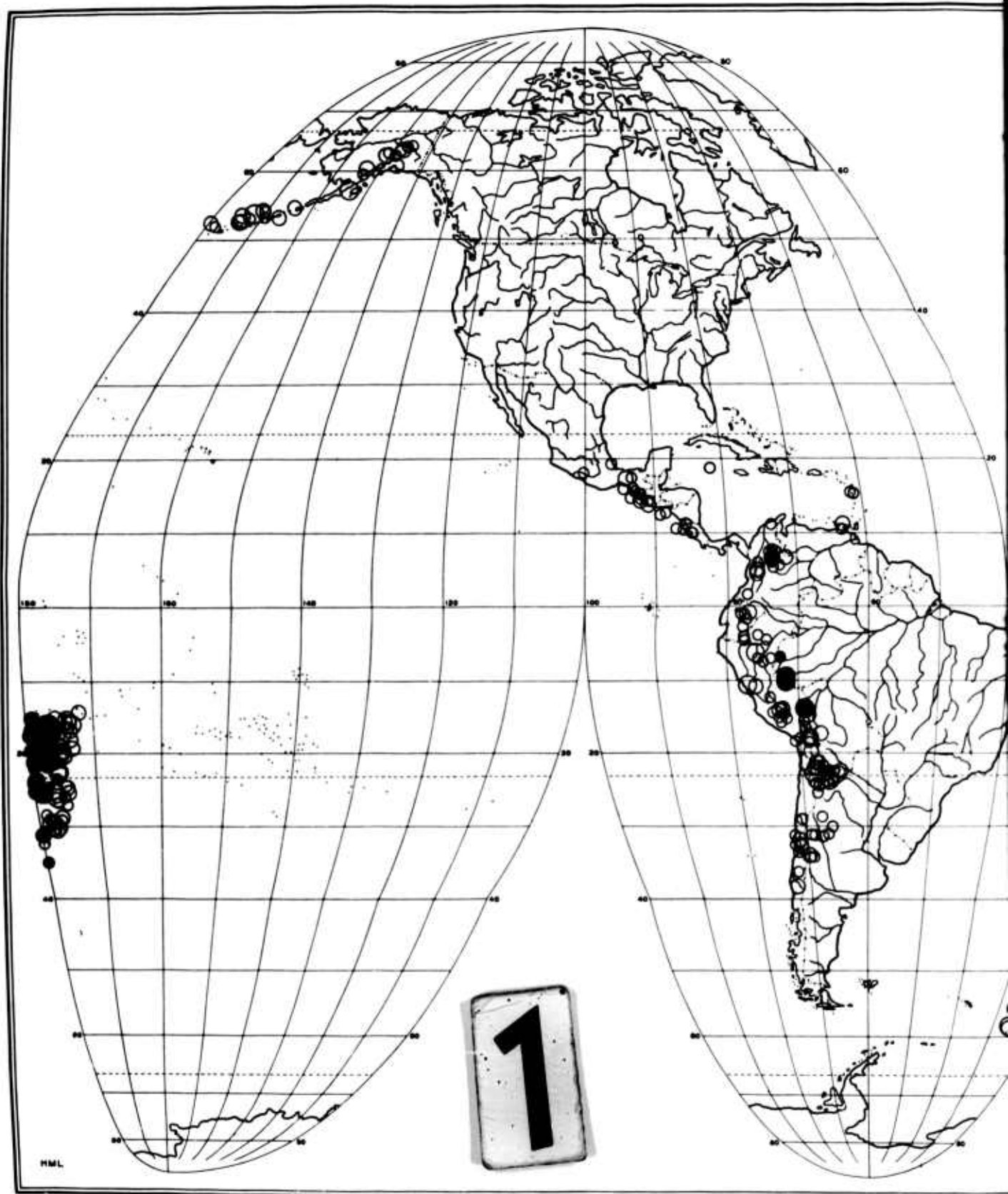


Figure 1. Earthquake Epicenters During 1963 ( $M \geq 4.0$  and  $h \leq 70$ ) 15/16





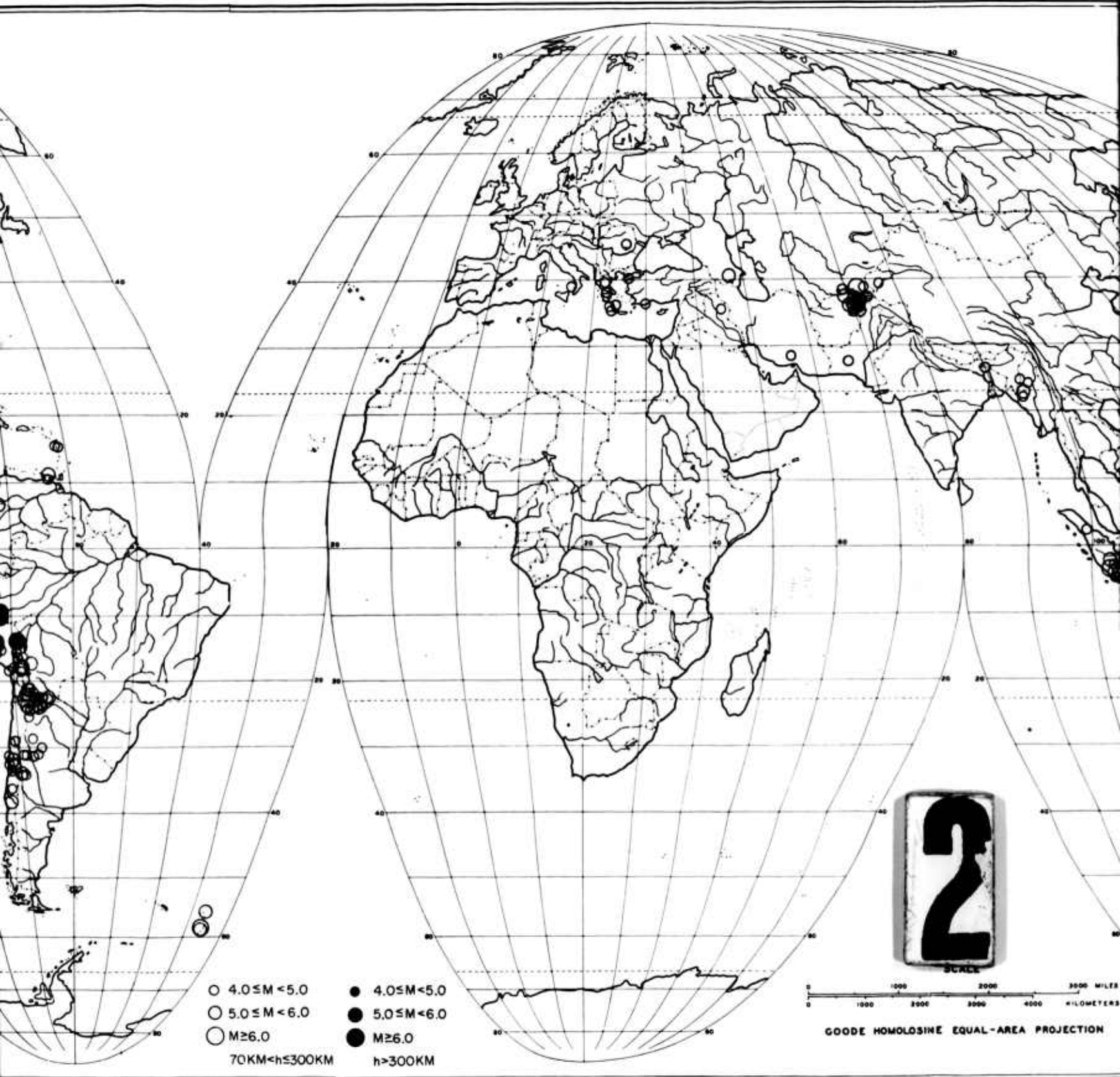


Figure 2. Earthquake Epicenters

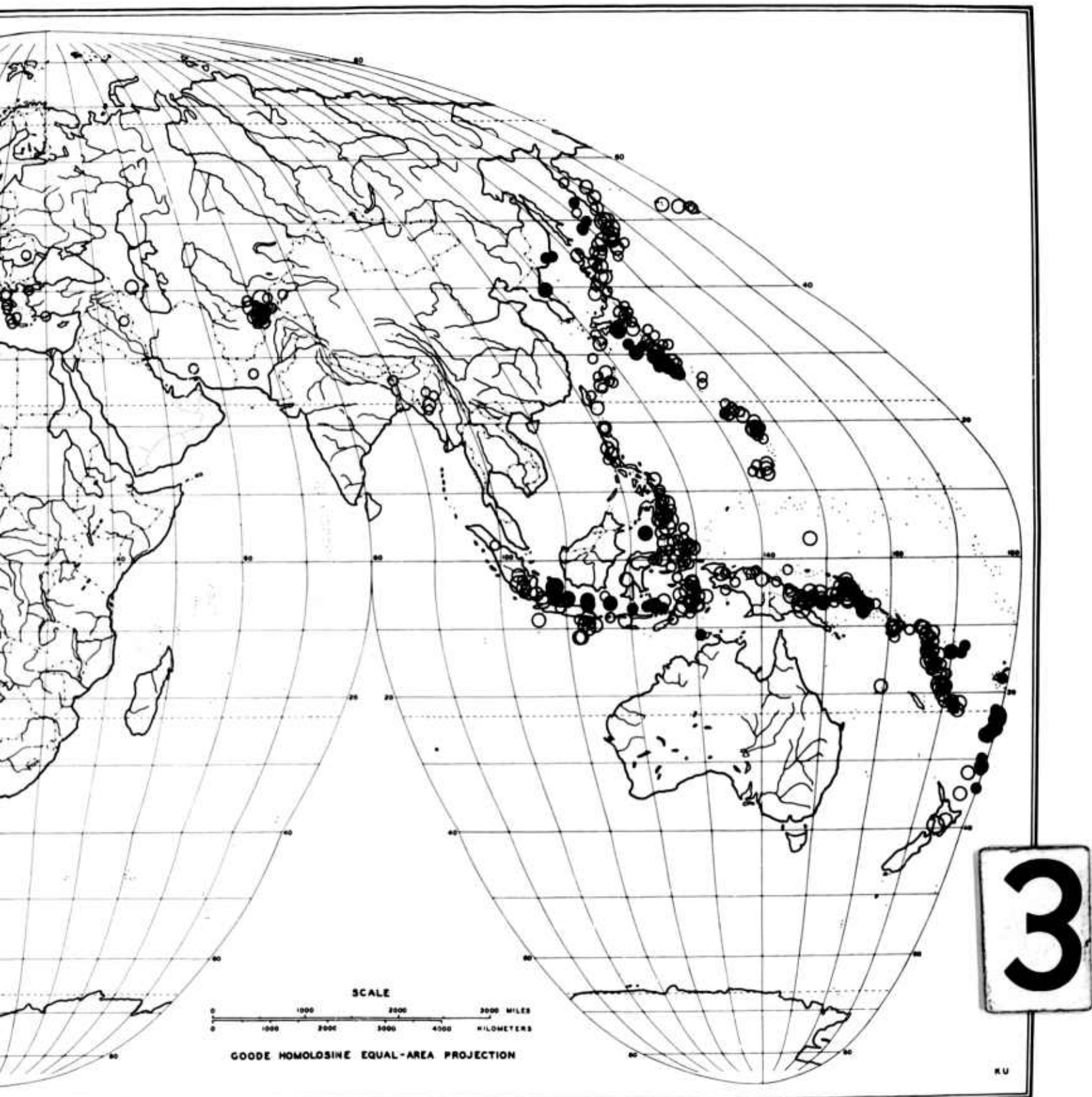
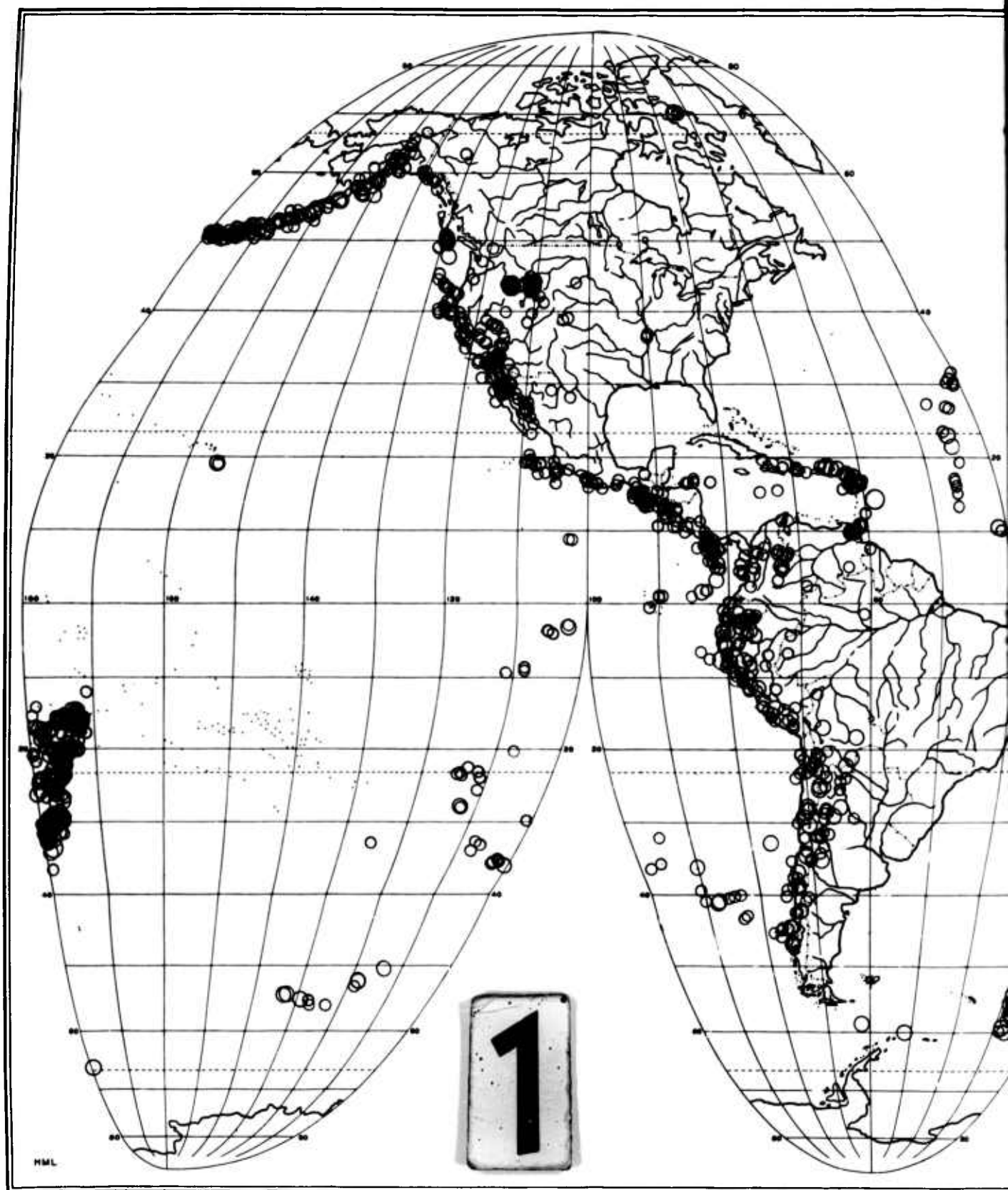


Figure 2. Earthquake Epicenters During 1963 ( $M \geq 4.0$  and  $h > 70$ ) 17/18



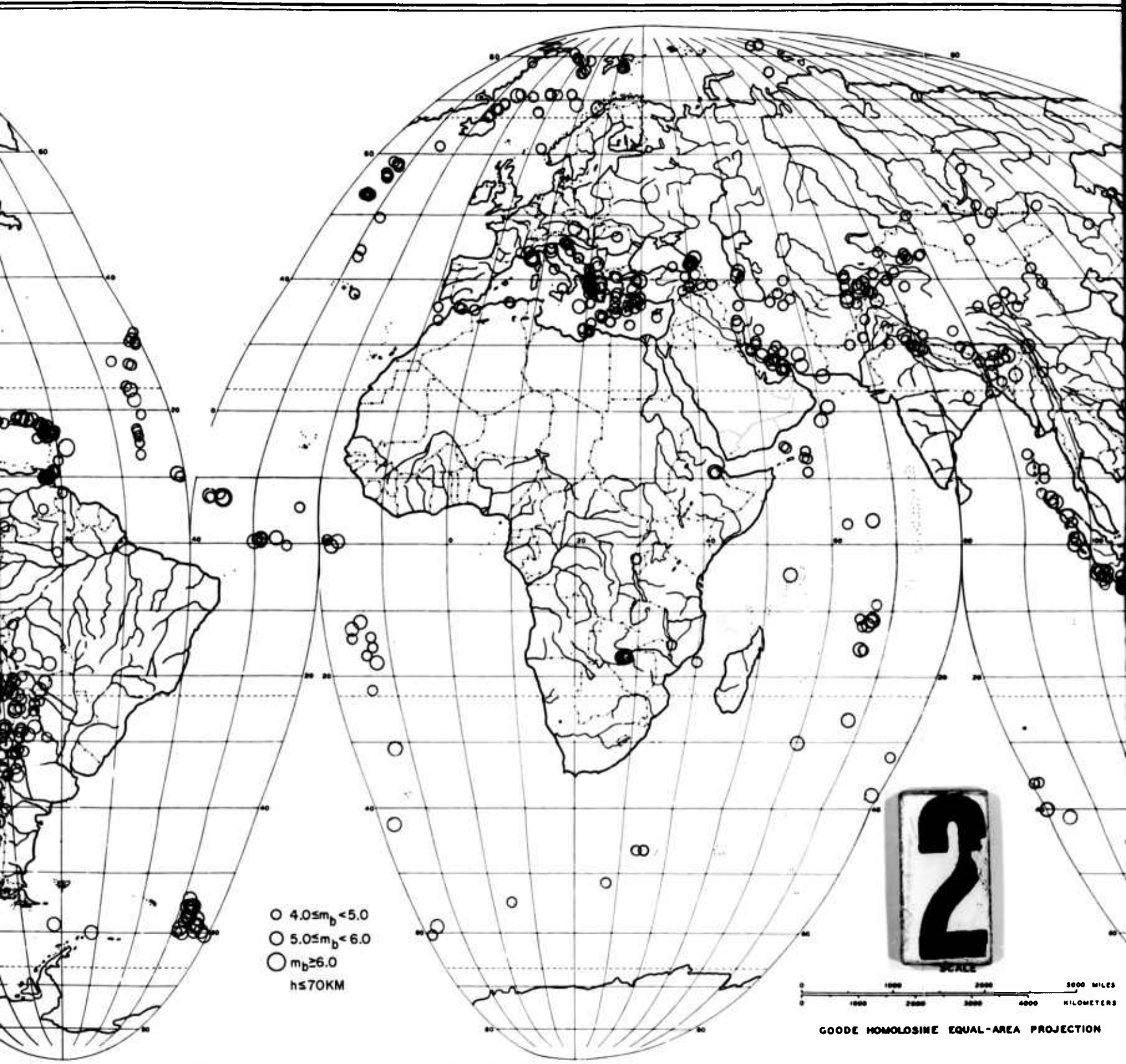


Figure 3. Earthquake Epicenters



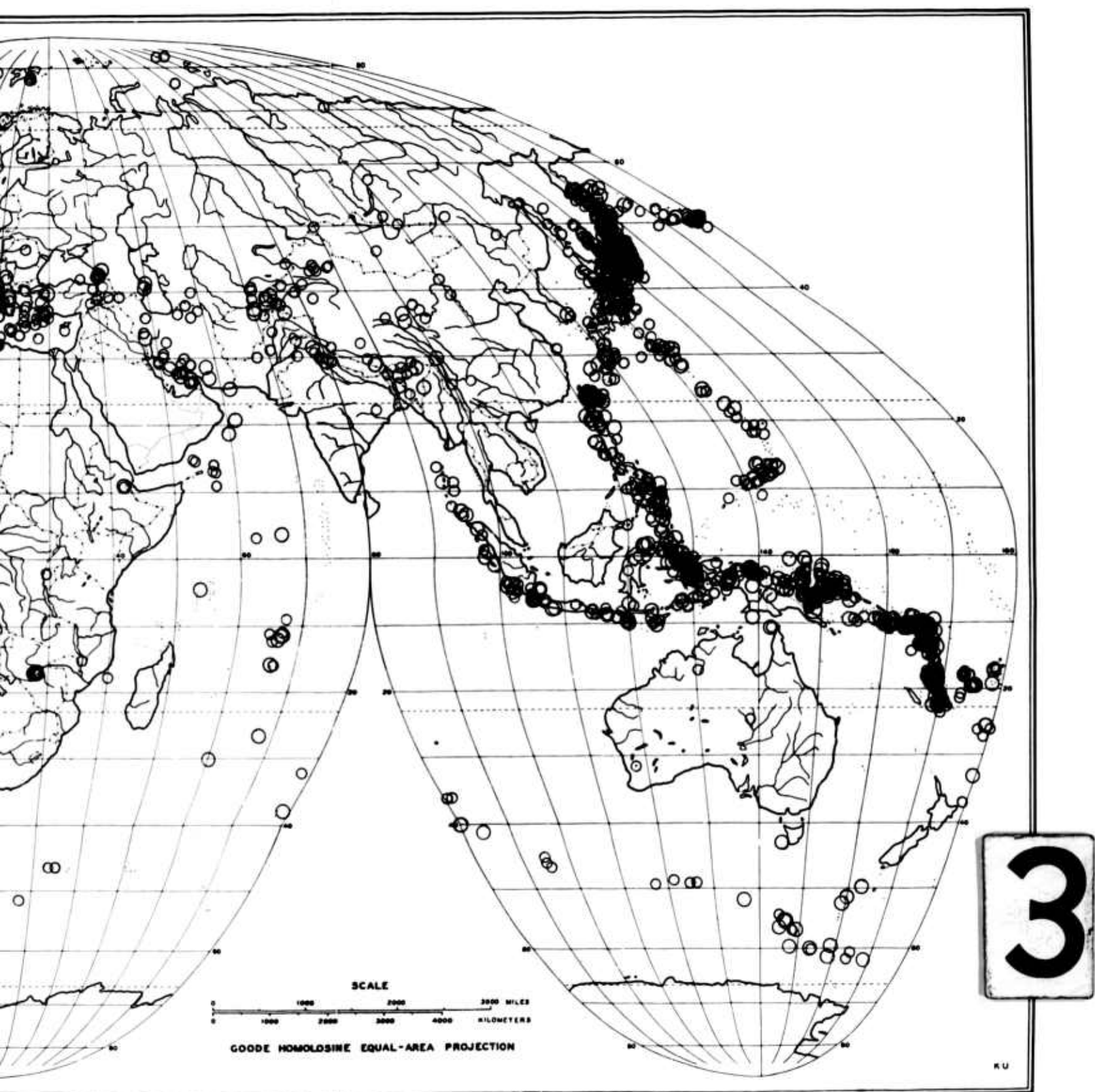
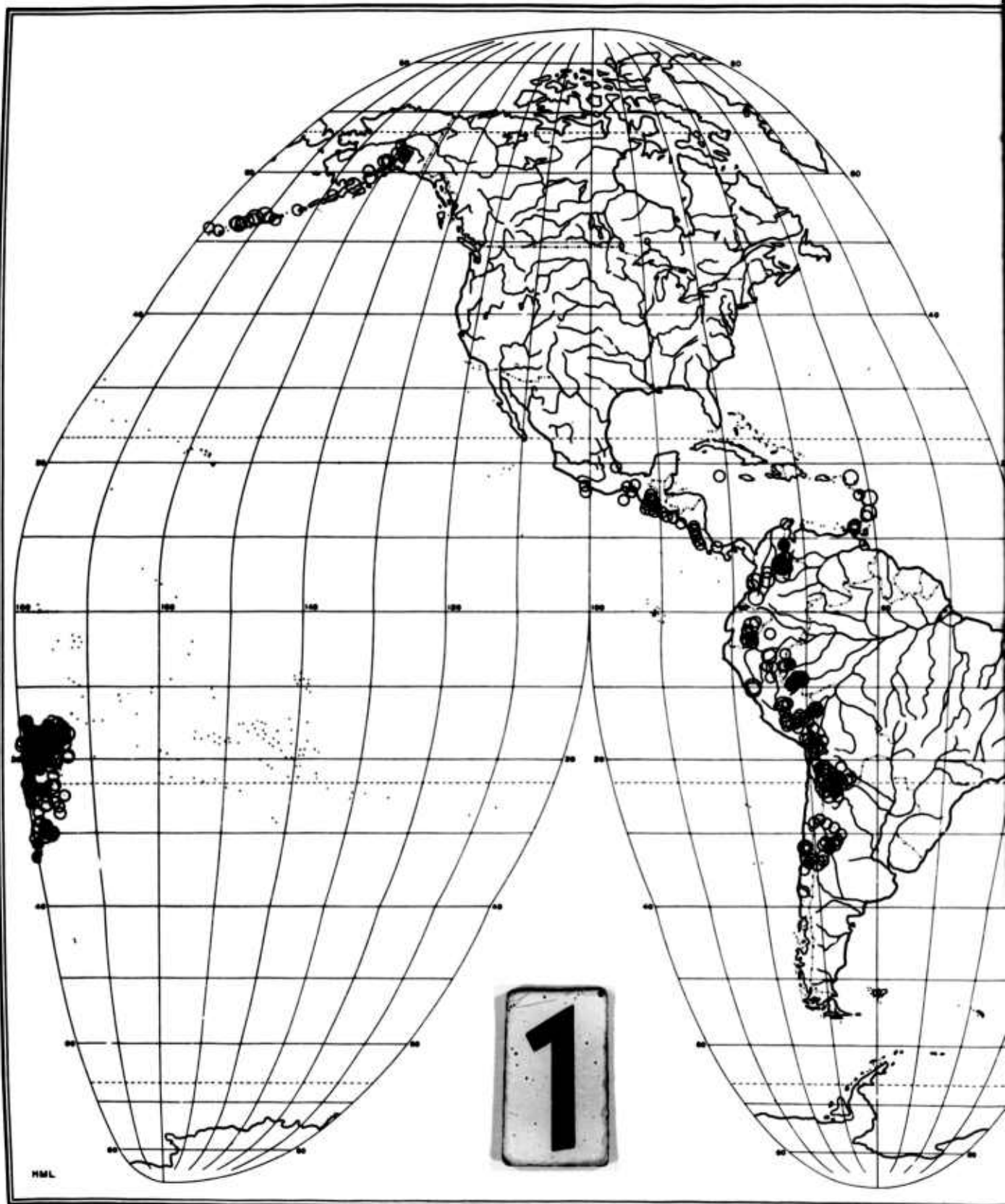


Figure 3. Earthquake Epicenters During 1963 ( $m_h \geq 4.0$  and  $h \leq 70$ ) 19/20



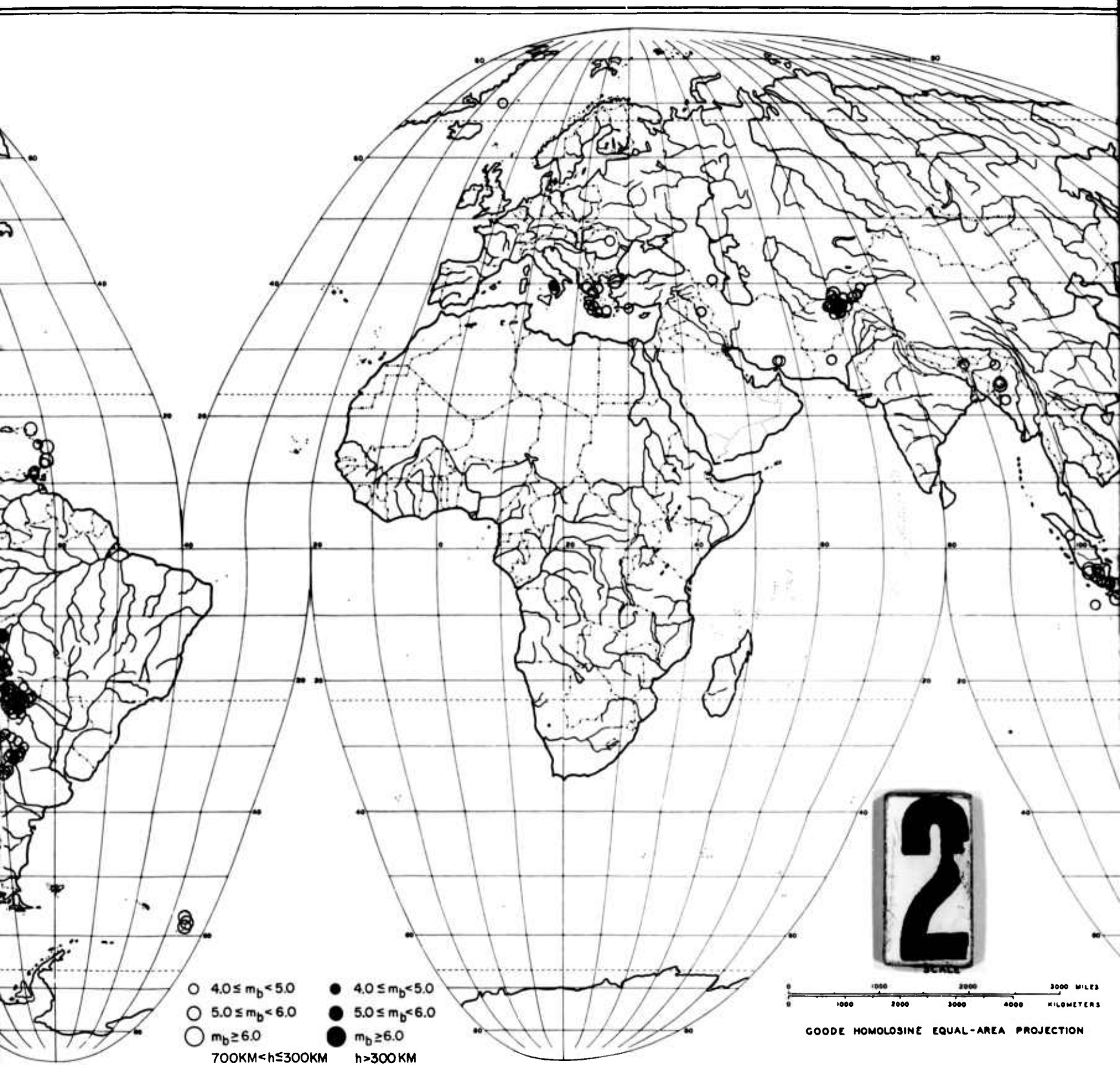


Figure 4. Earthquake Epicenters Dur

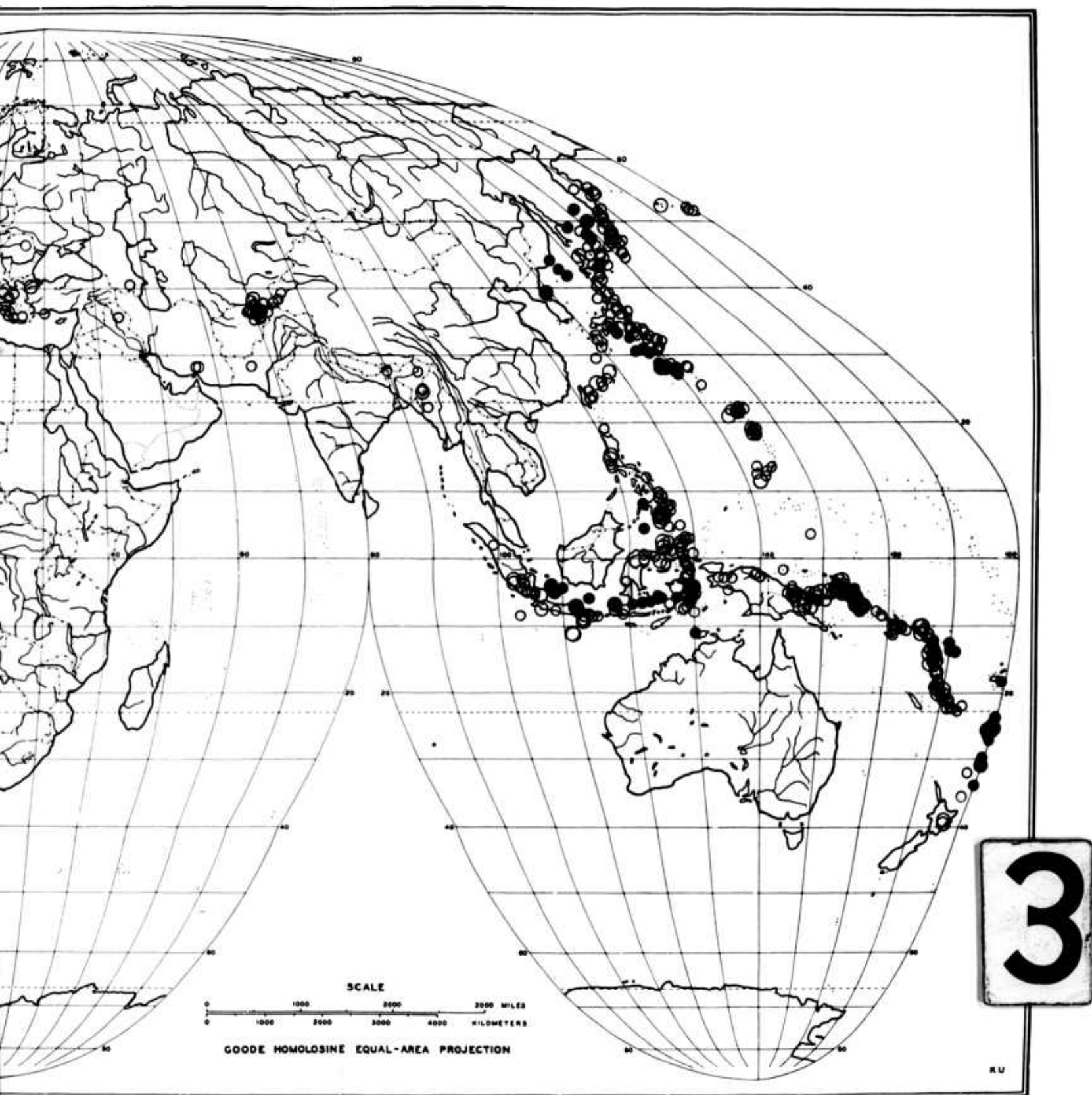
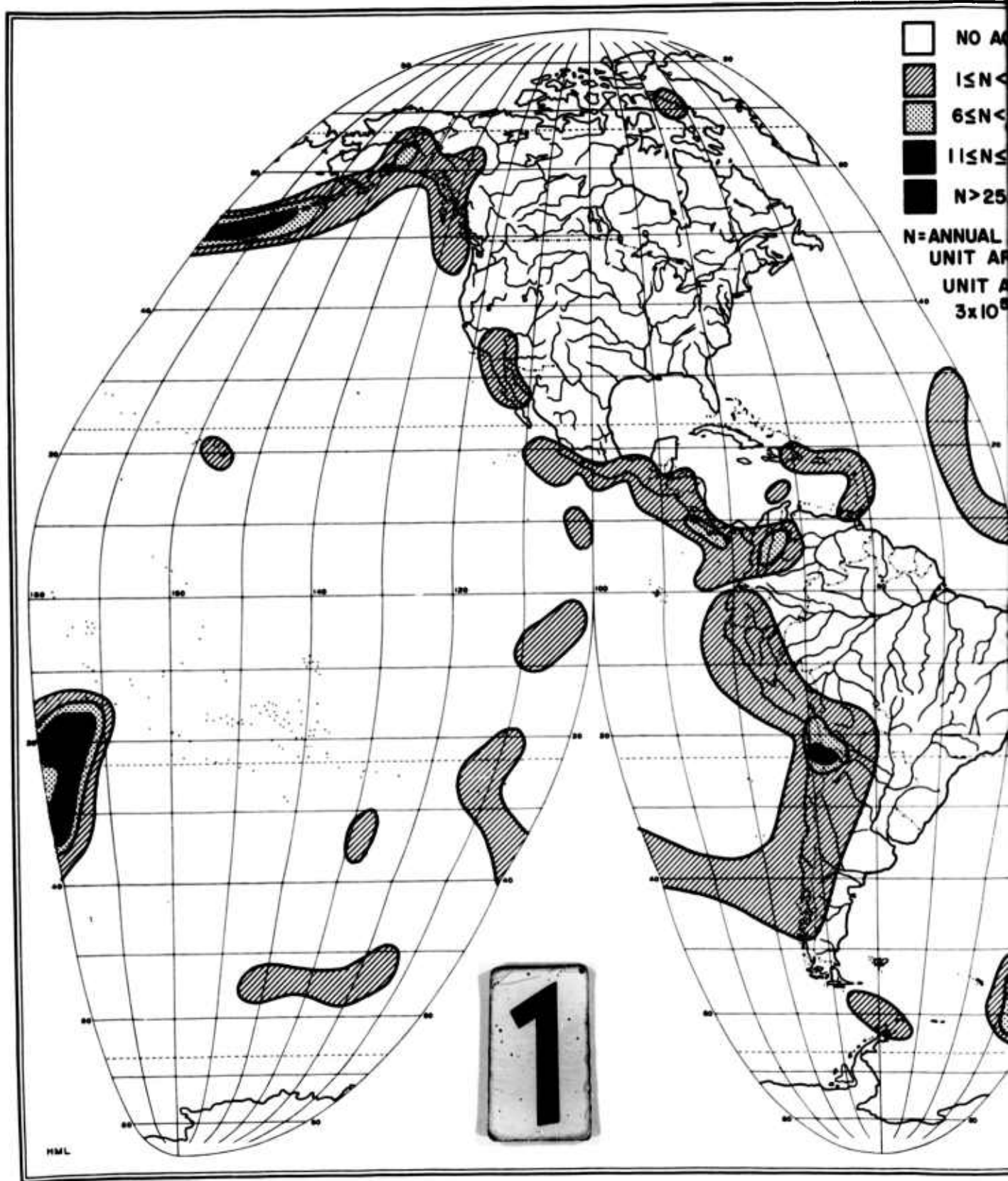


Figure 4. Earthquake Epicenters During 1963 ( $m_b \geq 4.0$  and  $h > 70$ )





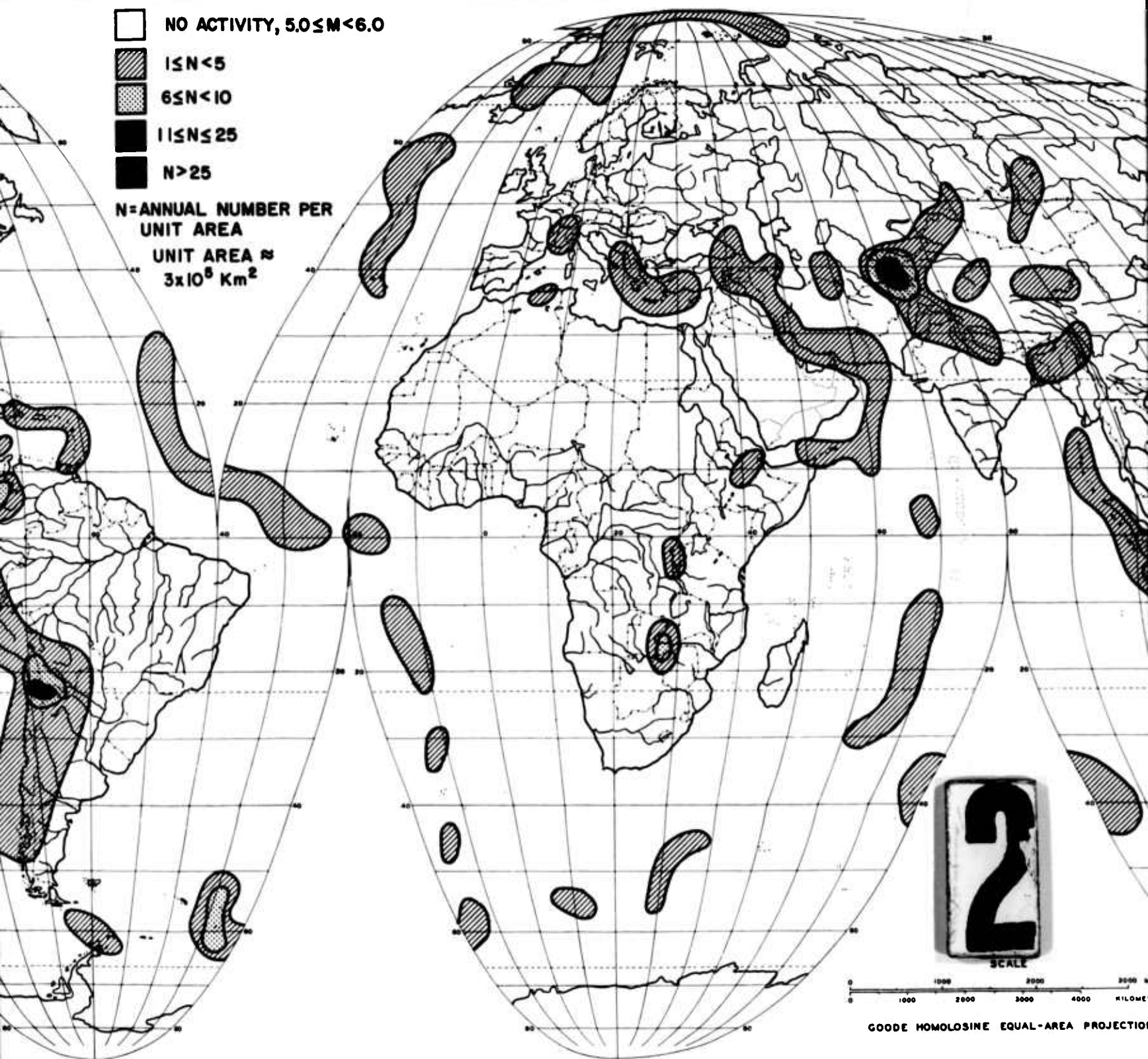


Figure 5. Worldwide Seismicity for 1963,  
 $(5.0 \leq M < 6.0)$

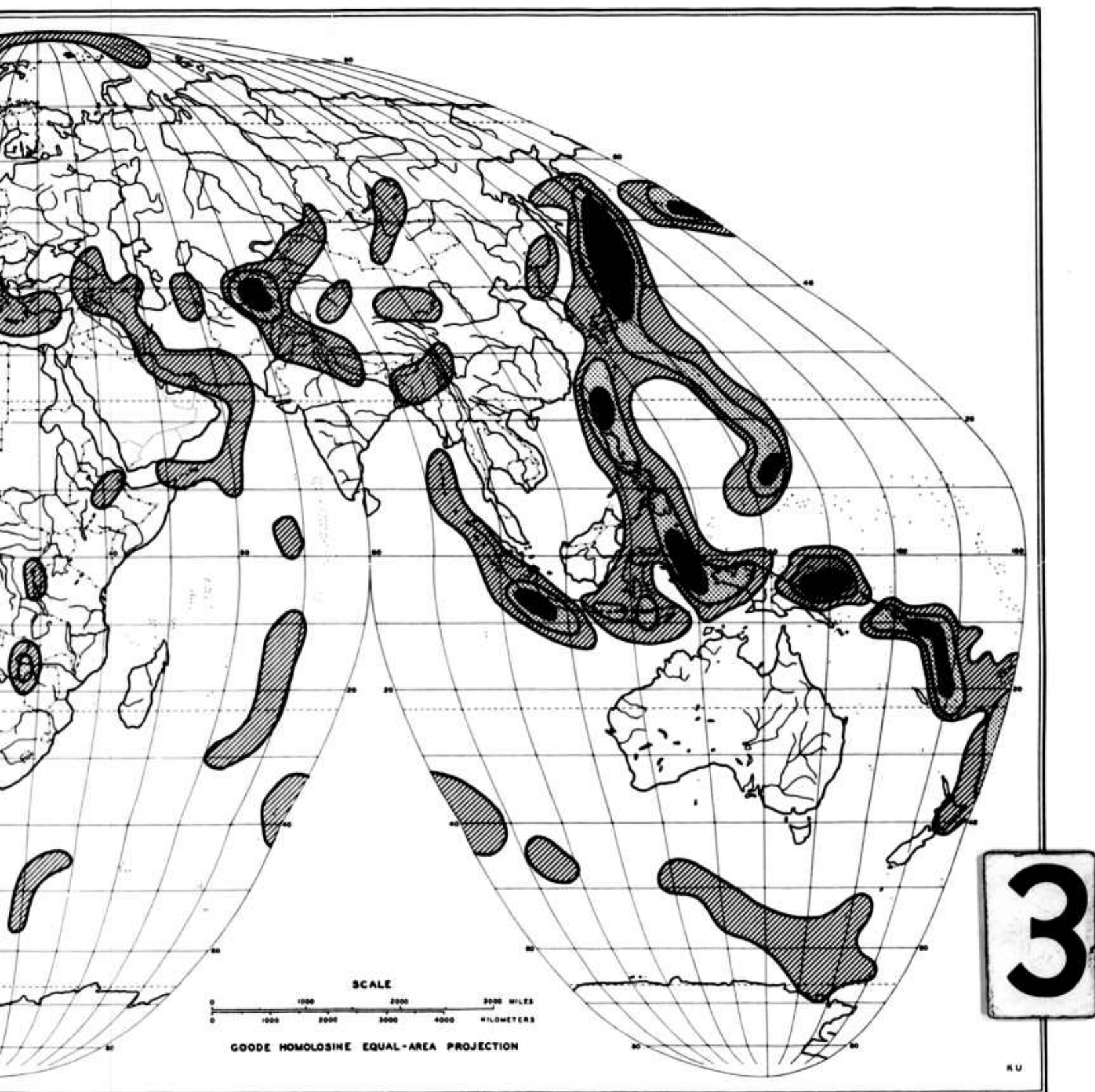


Figure 5. Worldwide Seismicity for 1963, Based on Annual Numbers of Earthquakes  $(5.0 \leq M < 6.0)$  Per Unit Area 23/24

Upon reaching the Colombia coast, the main branch divides into two parts: one continues along the coast of South America; the other crosses northern Colombia to the Venezuela coast east of Lake Maracaibo, and continues along that coast to Trinidad, where it follows the trend of the Lesser Antilles and then back to the west along the Greater Antilles to Jamaica and across to Honduras, forming the Caribbean loop.

The southern branch continues along the Colombia and Ecuador coast to northern Peru, where another division is made; the major fault system continues along the coast, while a lesser system follows along the eastern side of the Andes to about the eastern Bolivia-Argentina border where it curves more to the west to rejoin the coastal branch at about 30 degrees south latitude. These recombined branches continue southward along the coast to about 45 degrees south latitude. At this point, these branches intersect with a branch from the Easter Island vicinity, which completes a loop in the southeast Pacific.

A lack of epicenters south of Easter Island to about 50 degrees south latitude renders a connection between the Easter Island tectonic system and that in the south Pacific between 50 and 60 degrees south latitude and 110 and 140 degrees west longitude, somewhat hypothetical. The same may be said for a connection between this last mentioned zone and that in the Macquarie Islands area. However, a system of rises exists here which is considered the boundary of the Pacific basin. The remoteness of this area from land masses, and thus from seismograph stations, makes location of shocks of magnitude less than 5.0 difficult. Hence, the existence of fracture zones along these ridge systems is not improbable, although such zones are certainly less active than in the better known portions of the circum-Pacific belt.

From the Macquarie Islands two zones may be traced. One follows northward in a long arc through New Zealand, Kermadec Islands and Tonga Islands to the Samoa-Fiji Islands area. Here it follows a shorter arc through the Fijis to the New Hebrides, where it bends northward along the New Hebrides arc to the Solomon Islands, through the Solomons to New Britain and along the northern coast of New Guinea to the Molucca passage where an intersection is made with the Alpide zone at the eastern end of the Sunda arc.

At this point, the trace turns northward along the eastern side of the Philippine Islands to Formosa and up the Ryukyu Islands to Japan. Branching southward from southeastern Honshu, another fault zone passes through the Volcano Islands, the Mariana Islands and into the Caroline Islands where it terminates. Apparently, there is no connection between this point and the Bismarck archipelago. Thus, this branch does not completely enclose the Philippine Sea.



The zone in Japan continues along eastern Honshu to Hokkaido and up the Kurile Islands arc and eastern Kamchatka, the starting point of our trace. Thus, it is seen that a continuous trace of fault zones of varying activity may be traced completely about the Pacific Ocean.

Earlier it was mentioned that two zones may be traced from the Macquarie Islands. The second follows along the Indian-Antarctic swell south of Australia trending toward Madagascar. At about 30 degrees south latitude, 70 degrees east longitude, an intersection is made with a zone extending southward from the Persian Gulf. From this intersection a line may be inferred curving south and west to an intersection with the southern extremity of the mid-Atlantic ridge in the Bouvet Islands area, and continuing westward to the Sandwich Islands and South Shetland Islands, through Drake Passage and then curving upward along the extreme south Chilean coast to meet the more active zone in southern Chile at about 45 degrees south latitude. By returning to Southern Chile, a continuous zone of relatively low activity has been traced around the stable Antarctic continent.

From the Bouvet Islands, the mid-Atlantic ridge zone follows a nearly northerly direction to about the equator where it turns sharply west to about 30 degrees west longitude and then curves north and east to the Azores, where a northerly direction is resumed. The shocks which have occurred off the coast of Portugal (not in 1963) may imply a connection between the Alpide zone and the mid-Atlantic zone westward from the Azores to Morocco.

The Alpide zone extends from Morocco along the Algerian coast up to southeastern France, then across northern Italy, the Yugoslav coast, Greece, Cyprus, Turkey, the Caucasus Mountains, northern Iran, Afghanistan, the Himalayas and northern Burma, where the zone turns sharply south down to the Andaman and Nicobar Islands and then follows the Sunda arc to the intersection with the circum-Pacific zone.

Several branches of the Alpide zone may be observed. Beginning at the western end of the Alpide zone, the first branch appears as a southern extension of Caucasus Mountains portion of the Alpide zone and follows that trend along the Iran-Iraq border and the eastern shore of the Persian Gulf. The branch then enters the Arabian Sea following the coastline of the Arabian peninsula to about 55 degrees east longitude where an intersection is made with a previously mentioned branch which continues southward into the Indian Ocean. Also from 55 degrees east longitude, a zone continues west through the Gulf of Aden and joins the African rift zone. The possibility also exists that the African rift is connected with the Indian Ocean zone eastward from Southern Rhodesia across Madagascar.

Traces now have been completed which surround the stable portions of Africa, continuing our pattern of stable areas separated by fault zones.

Another branch from the Alpidic zone occurs at the Hindu Kush. This zone extends along the Pamirs, into Sinkiang, China, Mongolia, and northward to Lake Baikal in the USSR. Also, several small loops may be observed in western China which follow along mountain systems and separate stable plateaus.

The zone extending to Lake Baikal may be connected with the Arctic zone across eastern Siberia but seismic evidence for such a link is lacking. Available data tends to show, rather, that a loop is formed by a zone extending south across Mongolia and central China.

The northern end of the mid-Atlantic zone joins the Arctic zone north of Iceland. The Arctic zone then turns eastward toward Norway and north to Spitzbergen and Svalbard and continues on, remaining south of the North Pole, to the Laptev Sea and across Eastern Siberia to Sakhalin Island, intersecting the circum-Pacific zone at Hokkaido.

Thus, the picture of worldwide tectonic features is complete. The stable masses of the Americas, Eurasia, Africa, Antarctica and Pacific basin are seen to be surrounded by large scale fracture zones. Some exceptions to the pattern also appear. Among these are: absence of a connection between the Leeward Islands and the mid-Atlantic ridge; no apparent zone through the Red Sea to isolate the Arabian peninsula from Africa; no apparent zones to separate the Indian shield, the eastern Indian Ocean and Australia; and the gap between the Caroline Islands and the Bismarck archipelago.

A statistical view of seismicity is presented in Tables III and IV which present statistics in terms of  $M_S$  and  $m_b$ , respectively. Data are shown for all recorded shocks above magnitude 3.0 in each case, although worldwide coverage is considered complete only above magnitude 5.0 ( $M_S$  and  $m_b$ ). S, I and D refer to shallow ( $h \leq 70$  km), intermediate ( $70 \text{ km} < h \leq 300 \text{ km}$ ) and deep ( $h \geq 300 \text{ km}$ ) focus earthquakes, respectively. Regions are as given by Gutenberg and Richter (1954). The column on the right show the percentage of worldwide activity ( $M \geq 5.0$  or  $m_b \geq 5.0$ ) which occurred in 1963 in each region.

For comparison purposes, Table V shows similar data obtained in the 1960 study. On the basis of earthquakes for which  $M_S \geq 5.0$ , 1963 seismicity was at a lower level, worldwide, than in 1960. In 1963, a total of 1,540 shocks at all depths ( $M_S \geq 5.0$ ) were recorded as compared to

TABLE III

REGIONAL MAGNITUDE STATISTICS 1963 ( $M_S$ )

Region	$3.0 \leq M_S < 4.0$			$4.0 \leq M_S < 5.0$			$5.0 \leq M_S \leq 6.0$			$6.0 \leq M_S \leq 7.0$			$7.0 \leq M_S < 7.3/4$			$M_S \geq 7.3/4$			$\% M_S \geq 5.0$																
	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D														
1	7	2		55	13		67	13		10	2								6.6	5.6															
2	14			17			1												0.1																
3	34			17			2												0.2																
4	7			8	1														0.2																
5	15	2		46	15		11	3		1									1.0	1.1															
6	12	2		23	6		12	1											1.1	0.4															
7	2	6		19	21		11	5		1									1.0	2.2															
8	121	20	1	110	52	5	35	24		11	2	3							4.0	9.7	2.8														
9				6			8			2									0.9																
10							18	2		6	1								2.1	1.1															
11	1						3	2		2	1								0.4	1.1															
12	8						160	30	73	26	4	6							16.2	13.1	74.5														
13		4	15	66	32	78	2												0.2	0.4	0.9														
14			1	3	28	2	32	25	1	3	3								3.1	10.9	0.9														
15	15	8		54	17	2	28	25	3	7	1								3.0	9.3	2.8														
16	22	6		89	18		35	9		6									3.5	3.7															
17	96	2		10	1		11	2											1.0	0.7															
18	1		1	8	16	6	13	8	5			1							1.1	3.0	5.7														
19	21	7	1	314	23	2	260	22	2	40	2								34.8	9.0	1.9														
20		2		8	4		9	3	1	3									1.0	1.1	0.9														
21				12	2		13	1		1									1.2	0.4															
22	2	1	1	29	14		22	8	1	3	1								2.1	3.4	0.9														
23	32	2		23	21	1	41	25	1	10	4	1				1			4.4	11.2	1.9														
24	2	5	1	25	29	3	35	21	5	5	2								3.4	9.0	4.7														
25	5																		0.8		0.4														
26	9	1		15	1		8			1									1.0																
27	2	1		11	1		9			2									0.2																
28				3			2												0.2																
29				20			10	1											1.0	0.4															
30	13			45	7		11			1									1.0																
31	39	4		9	1		4			1									0.4																
32	4			28			32			2						1			3.0																
33				16			18			1									1.6																
34	16			8																															
36	6			3			8			2									1.0																
37				6																															
38	1			3															0.2																
39	1			3	1		2			1									1.1																
40	7	1		15			12												0.5																
41		1		2	1		6			1									0.4																
42				2			4			2									2.2																
43				12	1		24			2									0.5																
44				4			6			4									1.0																
45				4			7												0.5																
46																			1.0		1.9														
47																			0.2																
48																			0.4	3.4															
50																			0.1																
51																																			
543				1201				1000				233				158				95				1114				195				1852			
87				22				107				352				1660				1134				195				1852				1852			

TABLE IV

REGIONAL MAGNITUDE STATISTICS 1963 ( $m_b$ )

Region	$3.0 \leq m_b < 4.0$			$4.0 \leq m_b < 5.0$			$5.0 \leq m_b < 6.0$			$6.0 \leq m_b < 7.0$		$\% m_b \geq 5.0$		
	S	I	D	S	I	D	S	I	D	S	I	S	I	D
1	23	4		121	23		64	5				7.9	3.0	
2	24			12			1					0.1		
3	73			73			7					0.9		
4	5			22	1		4					0.5		
5	45	4		59	14		2	1				0.2	0.6	
6	23	3		55	10		6	1				0.7	0.6	
7	10	7		33	20		5	8				0.6	4.8	
8	388	10	4	260	96	4	58	15	3	1		7.2	8.9	5.5
9				18			3					0.4		
10				3			22	3				2.7	1.8	
11				2	1		5	2				0.6	1.2	
12	12	6	13	173	85	128	106	16	42			13.2	9.5	76.4
13				6		3		1	1				0.6	1.8
14	10	5		81	44	3	26	17		4		3.7	10.1	
15	4	1		63	26	5	26	17	1			3.2	10.1	1.8
16	122	1		173	23		90	25		1	1	11.3	15.5	
17				19	3		3					0.4		
18	1	2		15	18	9	7	5	3			0.9	3.0	5.5
19	16	6	2	679	53	5	153	8		1		19.1	4.8	
20				13	8	1	8	2				1.0	1.2	
21				18	3		10	1		1		1.2	0.6	
22	117		1	97	17	1	15	8				1.9	4.8	
23		3		53	32	2	29	13	1		1	3.6	8.3	1.8
24		3		44	45	6	23	10	3			2.9	6.0	5.5
25	11			7	3			1					0.6	
26	31			23	2		11					1.4		
27	3			18	2		4					0.5		
28				6										
29	47			31	1		10					1.2		
30	70	1		98	8		17	1				2.1	0.6	
31	3			15	1	1	5					0.6		
32	2			51			15			1		2.0		
33				24			11					1.4		
34	156			76			1					0.1		
36	1			6										
37	3			10			7					0.9		
38	1			3			1					0.1		
39	3			3	1		1					0.1		
40	5	1		37			3					0.4		
41				7	4		3					0.4		
42	2			7			3					0.4		
43				18	1		11					1.4		
44	1			11			1					0.1		
45				6			9					1.1		
46						7			1					1.8
47	38			31	2		5					0.6		
48	1	10		6	29		4	6				0.5	3.6	
49	3			1										
50							1					0.1		
51					1									
	1232	71	20	2587	577	175	796	166	55	9	2	99.6	100.2	100.1
			1323			3339			987		11			5660

TABLE V

REGIONAL MAGNITUDE STATISTICS 1960 ( $M_S$ )

Region	$3.0 \leq M_S < 4.0$			$4.0 \leq M_S < 5.0$			$5.0 \leq M_S < 6.0$			$6.0 \leq M_S < 7.0$			$7.0 \leq M_S < 7.3/4$			$M_S \geq 7.3/4$			$\% M_S \geq 5.0$		
	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D	S	I	D
1	19			52	5		53	10		8	1		1			4.5	4.8		4.5	4.8	
2	3			3			2			1						0.2			0.2		
3	37			27			7			2						0.6			0.6		
4	7			9			4									0.3			0.3		
5	43			79	11		27	18		1						2.0	7.9		2.0	7.9	
6	53			104	2		29	2		3						2.3	0.9		2.3	0.9	
7	14			61	10		20	2		1						1.5	0.9		1.5	0.9	
8	99	4		86	17	2	36	23		8	7		2			3.2	14.1		16.6	0.9	2.5
9	2	10		91	2		18	1		38	1		10			2.3	0.4		2.3	0.4	
10				1			21	1		11						1.3	2.6		1.3	2.6	
11	2			17	5		17	6		2						16.3	9.7		16.3	9.7	2.5
12	48			50	12	34	205	20		52	21					0.4	0.9		0.4	0.9	64.2
13	2			2			5	2		4						4.3	6.6		4.3	6.6	4.9
14	16			70	15		47	11		13	3					3.7	9.7		3.7	9.7	4.9
15	21			64	19		40	17		11	5					2.2	1.8		2.2	1.8	
16	31	2		45	8		27	4		3			1			0.5	1.8		0.5	1.8	
17		3		5	5		7	4								1.5	2.2		1.5	2.2	8.6
18	7			15	8		21	5		6						8.0	9.7		8.0	9.7	1.2
19	8	2	1	143	28	1	92	19		18	2		1			0.9	2.6		0.9	2.6	
20		1		5	1		10	4		3	2					0.4	0.4		0.4	0.4	
21	1			9	1		5	1		1						2.4	3.1		2.4	3.1	1.2
22	75			60	1	1	31	6		1	2					5.6	2.2		5.6	2.2	1.2
23	3			13			64	2		14	3					2.7	4.0		2.7	4.0	3.7
24				27	14	1	35	7		2	2		1			0.3	2.2		0.3	2.2	
25	2			2			4	5								1.2			1.2		
26	26			24	1		12			3						0.4	0.4		0.4	0.4	
27	4			12	3		6	1								0.3			0.3		
28				6			4									2.4	0.4		2.4	0.4	
29	11			24	1		30	1		3						2.2	0.4		2.2	0.4	
30	99			94	2		30									0.6			0.6		
31	33	2		22			8	1		1						2.2			2.2		
32				20	1		22			9						1.2	1.3		1.2	1.3	
33				9			13	3		3						0.2			0.2		
34	37			9												0.9			0.9		
35				11			3									0.3	0.4		0.3	0.4	
36	25			32			12									0.4			0.4		
37	50			17			4									0.1			0.1		
38	16															1.6			1.6		
39																0.5			0.5		
40	5			12	1		5			1						0.4			0.4		
41				2	3		1									0.2	5.7		0.2	5.7	4.9
42	8						18	2		4						0.9			0.9		
43							7									1.6			1.6		
44	1			2			4									0.4			0.4		
45				3												0.2			0.2		
46																0.9			0.9		
47	23			18			3									1.6			1.6		
48	3			10	11		12	11		1						100.0	100.0		100.0	100.0	99.8
49	1															2			2		
50																20			20		
51																4170			4170		
	836	36	3	1367	188	47	1183	193	76	185	29	5	15	5	2	100.0	100.0	2	100.0	100.0	99.8
			87%			160%			1452		219		20		2						

1,693 in 1960. However, the number of intermediate and deep-focus earthquakes in 1963 exceeded the totals in 1960; 267 and 107 compared to 227 and 81 in 1960. A contributing factor in this apparent increase in deeper-than-normal depth activity is probably the improved depth determination in 1963 resulting from use of electronic computers and the availability of more data from an increased number of high-quality seismograph stations.

The decrease in shallow and normal focus activity may be attributed in part to the marked decrease in seismic activity in Southern Chile, compared to the extremely high level existing in 1960. As mentioned, the depth determination improvement probably resulted in fewer shocks being considered shallow when the depth actually exceeded 70 km.

Another comparison of 1963 seismicity can be made with the results of Gutenberg and Richter (1954). Their statistics show mean annual numbers of shallow earthquakes as:  $M \geq 7\frac{3}{4}$  -2;  $7.0 \leq M < 7\frac{3}{4}$  -12;  $6.0 \leq M < 7.0$  -108; and  $5.0 \leq M < 6.0$  -800. Similar figures for 1963 are 0, 8, 158, and 1000. The numbers of earthquakes  $\pm 1/4$  magnitude unit above magnitude 5.0 were determined for the 1963 data and a linear least-squares solution of the form  $\log N = a - b M_S$  was determined for all three depth classes. Figure 6 shows the points plotted and the least-squares solutions. The values found were:

shallow	$a = 8.00 \pm 0.09, b = 0.96 \pm 0.04,$
intermediate	$a = 8.14 \pm 0.10, b = 1.11 \pm 0.02,$
deep	$a = 6.70 \pm 0.05, b = 0.92 \pm 0.01.$

Modifying the results of Gutenberg and Richter (1954) to the same format as above yields:

shallow	$a = 7.42 \pm 0.02, b = 0.90 \pm 0.02,$
intermediate	$a = 9.1 \pm 0.02, b = 1.2 \pm 0.2,$
deep	$a = 8.4 \pm 0.02, b = 1.2 \pm 0.2.$

The 1960 data were sorted only into numbers per unit of magnitude. However, an estimate of values of "a" and "b" for 1960 are:

shallow	$a = 6.99,$	$b = 0.83,$
intermediate	$a = 6.21,$	$b = 0.83,$
deep	$a = 7.66,$	$b = 1.21.$

Considerable variation is apparent in these determinations. It appears that the average of 1963 and 1960 shallow activity would result in a relationship closer to that found by Gutenberg and Richter, although the

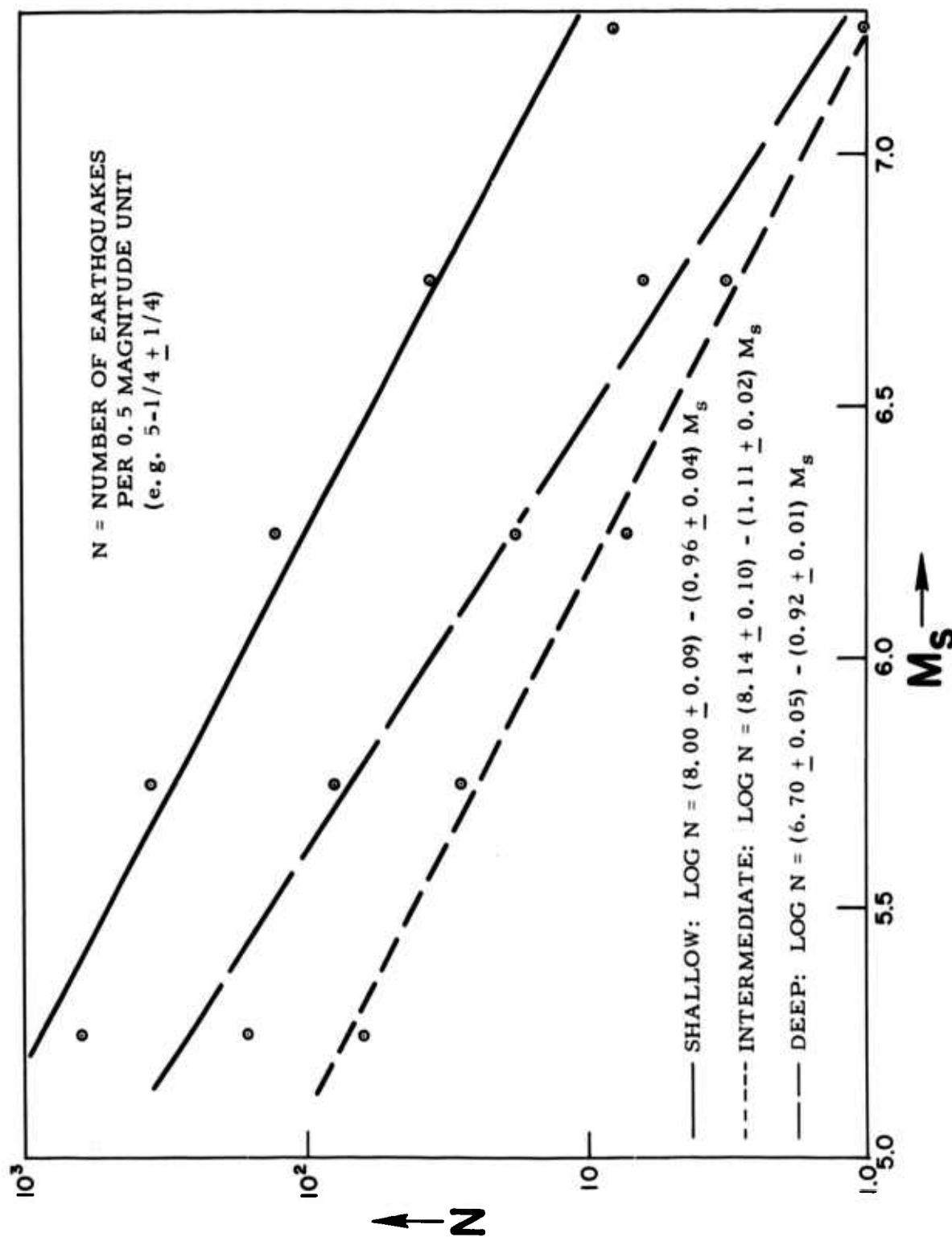


Figure 6. Worldwide Earthquake Recurrence Curves Based on 1963 Data

number of shocks less than magnitude 6.0 still would be larger than the estimate of Gutenberg and Richter (1954). Intermediate and deep-focus data may be too small a sample to yield valid results for mean annual activity as more variation is apparent in the recurrence relationships for these depths.

Statistics were also accumulated based upon the USC&GS unified magnitude,  $m_b$ , and are presented in Table IV. Many more earthquakes are listed for  $m_b \geq 3.0$  than for  $M_S \geq 5.0$ . However, inspection of the data shows fewer events for  $m_b \geq 5.0$  than  $M_S \geq 5.0$ . In comparing results of individual event magnitude calculation, it appeared that for the very small shocks,  $m_b$  was larger than  $M_S$ ; while for the bigger shocks,  $m_b$  was usually less than or equal to  $M_S$ . Most of the smaller shocks were recorded by stations near the epicenter while the larger events were recorded at teleseismic distances; therefore, an investigation of the differences in the two magnitude scales as a function of distance was warranted. Figures 7 and 8 illustrate the results of this investigation.

Figure 7a is a plot of the differences ( $M - m_b$ ) as a function of distance. Here,  $M$  is called  $M_{TOT}$ , which means it is the average of both body and surface wave magnitudes (when both are recorded). Considerable scatter is apparent; however, a dependence on distance seems to exist up to about 15 to 20 degrees. Beyond this point a horizontal line at  $(M_{TOT} - m_b) = 0.8$  seems to fit the data rather well. Figure 7b is a similar comparison except  $m_b$  is subtracted from surface wave magnitudes only. No dependence upon distance is readily discernible and the same horizontal line, as in the previous figure, fits the data.

Figure 8 represents a further investigation of the relationship between  $m_b$  and  $M_S$ . Figures 8a—8d plot  $m_b$  as a function  $M_{TOT}$  in various distance ranges; 8a —  $\Delta \leq 6$  degrees, 8b —  $6 \text{ degrees} < \Delta \leq 16$  degrees, 8c —  $16 \text{ degrees} < \Delta \leq 30$  degrees and 8d —  $\Delta > 30$  degrees. In Figures 8a and 8b, the slope of the linear best-fits appears to be different from 45 degrees. In 8c and 8d, lines with slopes of 45 degrees and intercepts of 0.6 to 0.8 seem to give good fits.

Figure 8e plots  $m_b$  as a function of  $M_{RL}$ , the surface wave magnitude determined in this study. The reduction in the magnitude range available for plotting plus somewhat increased scatter in the points makes a linear fit to the points difficult. However, the lines determined for 8c and 8d would fit the data in 8e, also.



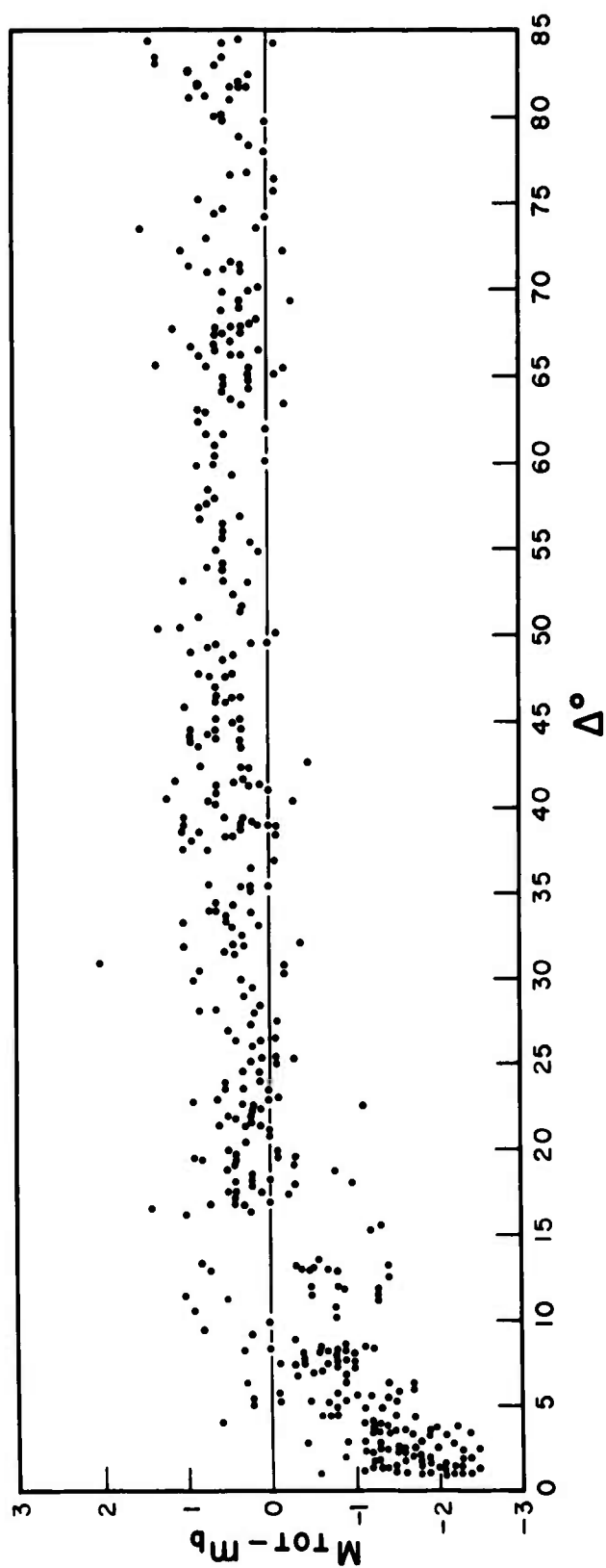


Figure 7a.  $M_{TOT} - m_b$  as a Function of Epicentral Distance

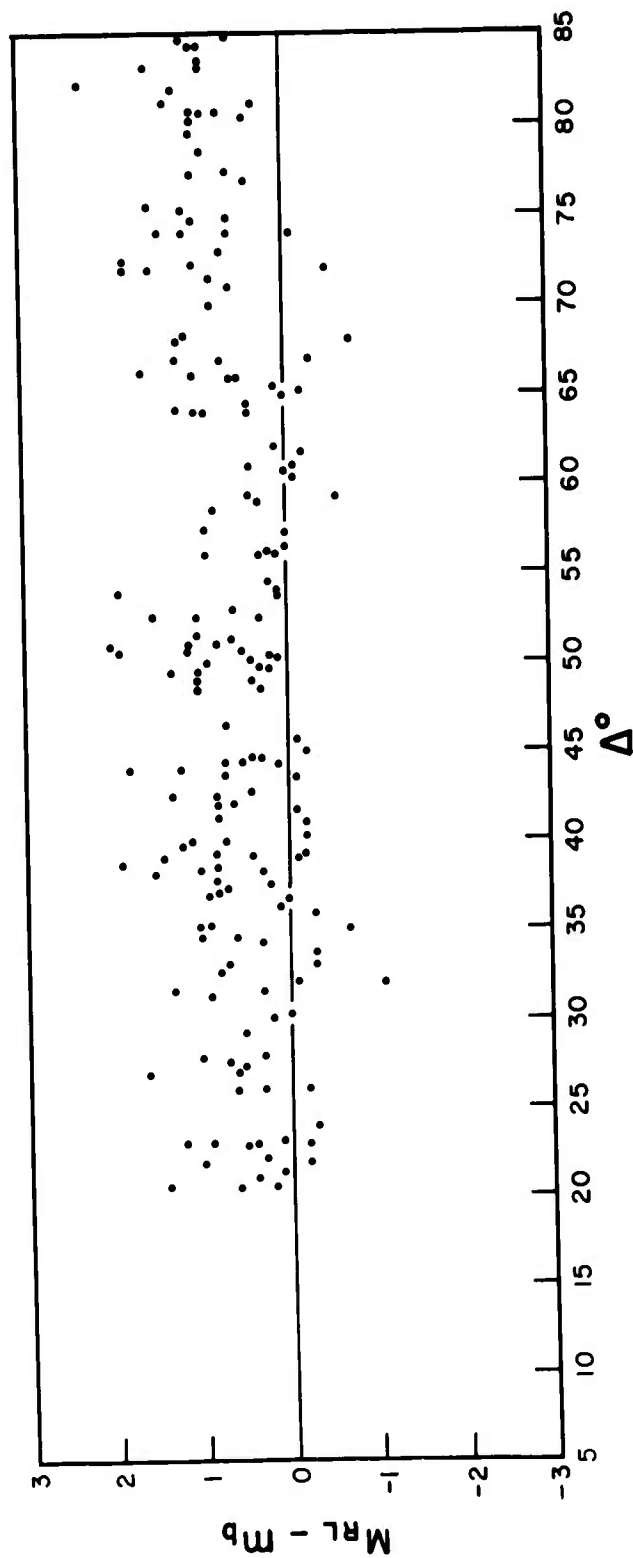


Figure 7b.  $M_{RL} - m_b$  as a Function of Epicentral Distance

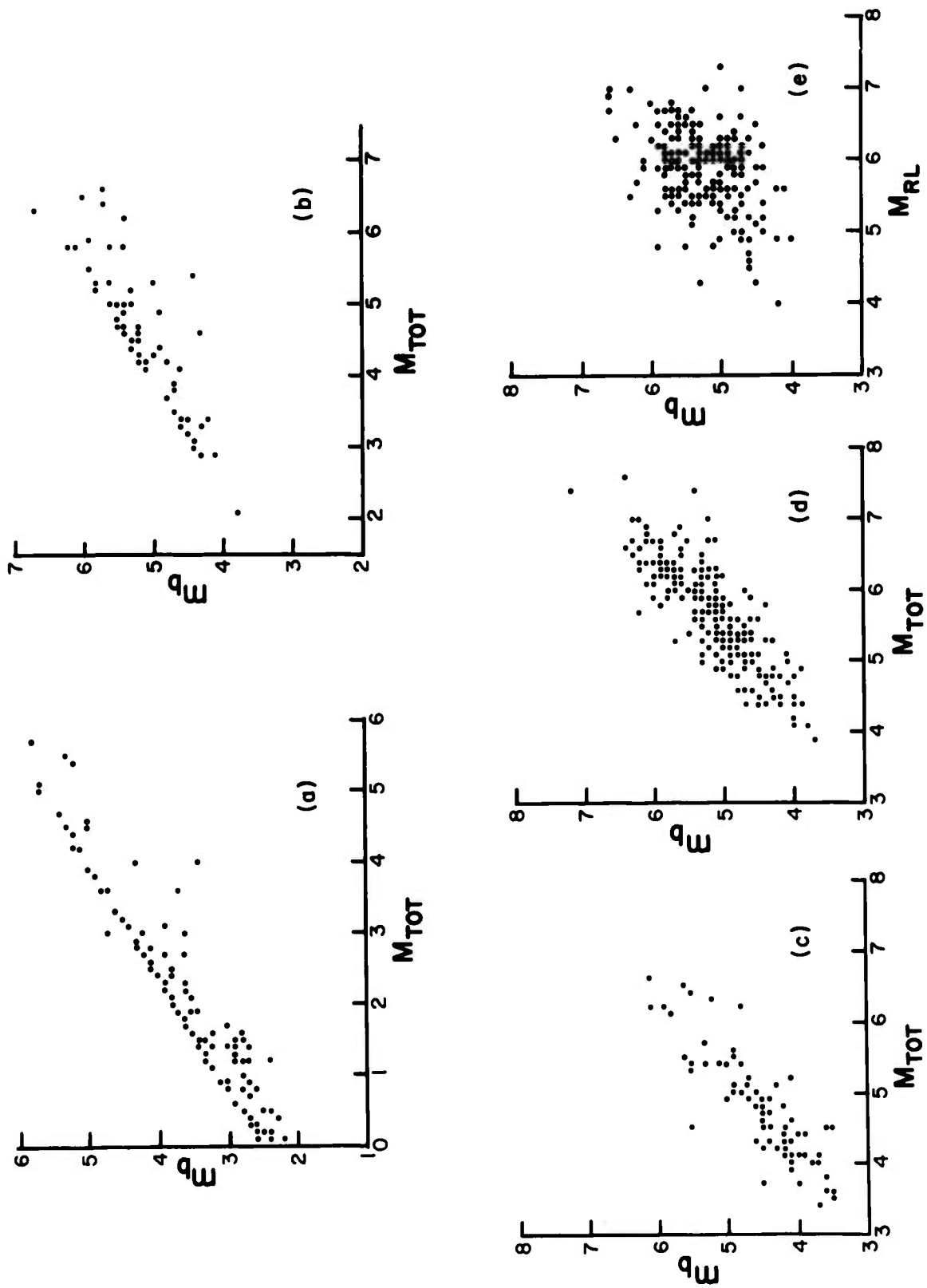


Figure 8. Unified Magnitude  $m_b$  Versus (a)  $M_{TOT}$ ,  $0^\circ < \Delta < 6^\circ$ ; (b)  $M_{TOT}$ ,  $6^\circ < \Delta < 16^\circ$ ; (c)  $M_{TOT}$ ,  $16^\circ < \Delta < 30^\circ$ ; (d)  $M_{TOT}$ ,  $\Delta > 30^\circ$ ; (e)  $M_{RL}$ ,  $\Delta > 30^\circ$ .

This brief investigation of the  $m_b - M_S$  relationship shows further work is needed to yield valid results in comparing seismicity data based upon the two scales. Comparison of Tables III and IV shows wide variation from region to region in the relationship of the two scales. In general, regions where stations are located yield different results than where recordings are made from only distant seismograph stations. For these reasons, a detailed comparison of seismicity based upon the two magnitude scales is deemed unfeasible at this time.

## B. REGIONAL DISCUSSIONS

Regional trends of seismic activity have been indirectly covered in the worldwide discussion. The following will be an elaboration in more detail of regional seismicity. Figure 9 shows the regional boundaries, adopted from Gutenberg and Richter (1954), and the geographical distribution of the seismograph stations from which data were used in this study. The stations and their coordinates are listed in Table VI.

### 1. Circum-Pacific Belt

Activity in the Aleutian arc followed the classic Pacific type. In general, shallow and normal focus earthquakes were located along the arc away from the Pacific. This is shown graphically in Figures 10 and 11. Epicenters of the intermediate depth shocks are, however, not significantly displaced from the shallow depth epicenters. If, as has been postulated, hypocenters fall along a plane dipping into the earth, this plane dips very steeply, approaching the normal, in the Aleutian arc. No deep-focus activity is found in this region.

Seismic activity in 1963 increased over 1960 for both shallow and intermediate depths as is shown by comparing data for Region 1 in Tables III and V. However, one shock of  $M > 7.0$  was recorded in 1960 and none in 1963. Percentage of worldwide activity increased from 4.5 and 4.8 to 6.6 and 5.6 for shallow and intermediate shocks, respectively.

Region 2 extends from southeastern Alaska to Puget Sound. Only shallow activity is found in this region and that accounted for only 0.1 percent of worldwide totals in 1963 and 0.2 in 1960. The most seismic area of the region occurs from Queen Charlotte Islands to Vancouver Island.

California and the adjacent areas comprise Region 3. Here, also, only shallow earthquakes occur (in southern California, particularly, they are quite shallow) and in 1963 accounted for only 0.2 per cent of the worldwide totals. Seismicity in 1963 decreased sharply from 1960 and in both years appears less than the mean annual values of Gutenberg and Richter (1954).

TABLE VI  
STATIONS USED FOR 1963 SEISMICITY STUDY

Station	Code	Latitude	Longitude	Region
Addis Ababa, Ethiopia	AAE	9° 01' 45" N	38° 45' 56" E	37
Adelaide, Australia	ADE	34° 58' 01" S	138° 42' 32" E	38
Afiamalau, Samoa	AFI	13° 54' 34" S	171° 46' 38" W	12
Albuquerque, New Mexico	ALQ	34° 56' 30" N	106° 27' 30" W	34
Alert, Canada	ALE	82° 29' 00" N	62° 24' 00" W	40
Ann Arbor, Michigan	AAM	42° 17' 59" N	83° 39' 22" W	34
Antofagasta, Chile	ANT	23° 41' 56" S	70° 24' 54" W	8
Arequipa, Peru	ARE	16° 27' 44" S	71° 29' 29" W	8
Athens, Greece	ATU	37° 58' 22" N	23° 43' 00" E	30
Baguio, Philippines	BAG	16° 24' 39" N	120° 34' 47" E	22
Balboa Heights, Canal Zone	BHP	8° 57' 39" N	79° 33' 29" W	6
Bermuda-Columbia, Bermuda	BEC	32° 22' 46" N	64° 40' 52" W	32
Blacksburg, Virginia	BLA	37° 12' 40" N	80° 25' 14" W	34
Bogota, Colombia	BOG	4° 37' 23" N	74° 03' 54" W	8
Bulawayo, Southern Rhodesia	BUL	20° 08' 36" S	28° 36' 48" E	37
Byerly, California	BKS	37° 52' 36" N	122° 14' 06" W	3
Camp Century, Greenland	CCG	77° 10' 00" N	61° 08' 00" W	42
Caracas, Venezuela	CAR	10° 30' 24" N	66° 55' 40" W	7
Charters Towers, Australia	CTA	20° 05' 18" S	146° 15' 12" E	38
Chiangmai, Thailand	CHG	18° 47' 24" N	98° 58' 37" E	25
Copenhagen, Denmark	COP	55° 41' 00" N	12° 26' 00" E	36
Copper Mine, Canada	CMC	67° 50' 00" N	115° 05' 00" W	42
Corvallis, Oregon	COR	44° 35' 09" N	123° 18' 12" W	3
Dugway, Utah	DUG	40° 11' 42" N	112° 48' 48" W	34
Florissant, Missouri	FLO	38° 48' 06" N	90° 22' 12" W	34
Godhavn, Greenland	GDH	69° 15' 00" N	53° 32' 00" W	42
Golden, Colorado	GOL	39° 42' 01" N	105° 22' 16" W	34
Goldstone, California	GSC	35° 07' 00" N	116° 48' 17" W	3
Guam, Mariana Islands	GUA	13° 35' 18" N	144° 54' 42" E	18
Hong Kong	HKC	22° 18' 13" N	114° 10' 19" E	25
Honiara, Solomon Islands	HNR	9° 25' 54" S	159° 56' 48" E	15
Istanbul, Turkey	IST	41° 02' 36" N	28° 59' 06" E	30
Kevo, Finland	KEV	69° 45' 20" N	27° 00' 50" E	40
Kipapa, Hawaii	KIP	21° 25' 24" N	158° 00' 54" W	39
Kongsberg, Norway	KON	59° 39' 00" N	9° 35' 00" E	36
Lahore, West Pakistan	LAH	31° 33' 00" N	74° 20' 00" E	47
La Palma, El Salvador	LPS	14° 17' 32" N	89° 09' 43" W	6
La Paz, Bolivia	LPB	16° 31' 58" S	68° 05' 54" W	8
Longmire, Washington	LON	46° 45' 00" N	121° 48' 36" W	3
Lubbock, Texas	LUB	33° 35' 00" N	101° 51' 00" W	34

TABLE VI (CONTD)

Station	Code	Latitude	Longitude	Region
Madison, Wisconsin	MDS	43° 22' 20" N	89° 45' 36" W	34
Malaga, Spain	MAL	36° 43' 39" N	4° 24' 40" W	31
Manila, Philippines	MAN	14° 40' 00" N	121° 05' 00" E	22
Minneapolis, Minnesota	MNN	44° 54' 52" N	93° 11' 24" W	34
Mould Bay, Canada	MBC	76° 14' 00" N	119° 20' 00" W	42
Mundaring, Australia	MUN	31° 58' 42" N	116° 12' 30" E	38
Nairobi, Kenya	NAI	1° 16' 26" S	36° 48' 13" E	37
Nana, Peru	NNA	11° 59' 15" S	76° 50' 32" W	8
New Delhi, India	NDI	28° 41' 00" N	77° 12' 00" E	47
Nurmijarvi, Finland	NUR	60° 30' 32" N	24° 39' 05" E	49
Port Moresby, New Guinea	PMG	9° 24' 32" S	147° 09' 14" E	16
Porto, Portugal	PTO	41° 08' 19" N	8° 36' 08" W	31
Pretoria, South Africa	PRE	25° 45' 00" S	28° 15' 00" E	37
Quetta, West Pakistan	QUE	30° 11' 18" N	66° 57' 00" E	47
Quito, Ecuador	QUI	0° 12' 58" S	78° 29' 57" W	8
Rabaul, New Britain	RAB	4° 11' 33" S	152° 10' 16" E	15
Resolute, Canada	RES	74° 41' 12" N	94° 54' 00" W	42
Riverview, Australia	RIV	33° 49' 46" S	151° 09' 30" E	38
Seoul, Korea	SEO	37° 34' 00" N	126° 58' 00" E	41
Shillong, India	SHL	25° 34' 00" N	91° 53' 00" E	26
Shiraz, Iran	SHI	29° 38' 31" N	52° 30' 47" E	29
South Pole, Antarctica*	SPA	90° 00' 00" S	0° 00' 00"	50
State College, Pennsylvania	SCP	40° 38' 36" N	77° 52' 10" W	34
Stuttgart, Germany	STU	48° 46' 15" N	9° 11' 36" E	36
Taipei, Formosa	ANP	25° 11' 00" N	121° 31' 00" E	21
Tasmanian University, Tasmania	TAU	42° 54' 36" S	147° 19' 14" E	38
Toledo, Spain	TOL	39° 52' 53" N	4° 02' 55" W	31
Trinidad, West Indies	TRN	10° 39' 00" N	61° 24' 6" W	7
Tucson, Arizona	TUC	32° 18' 35" N	110° 46' 56" W	3
Valentia, Ireland	VAL	51° 56' 00" N	10° 15' 00" W	32
Weston, Massachusetts	WES	42° 23' 05" N	71° 19' 20" W	34
Windhoek, South Africa	WIN	22° 34' 00" S	17° 06' 00" E	37

\* Not plotted on Station Location Map.

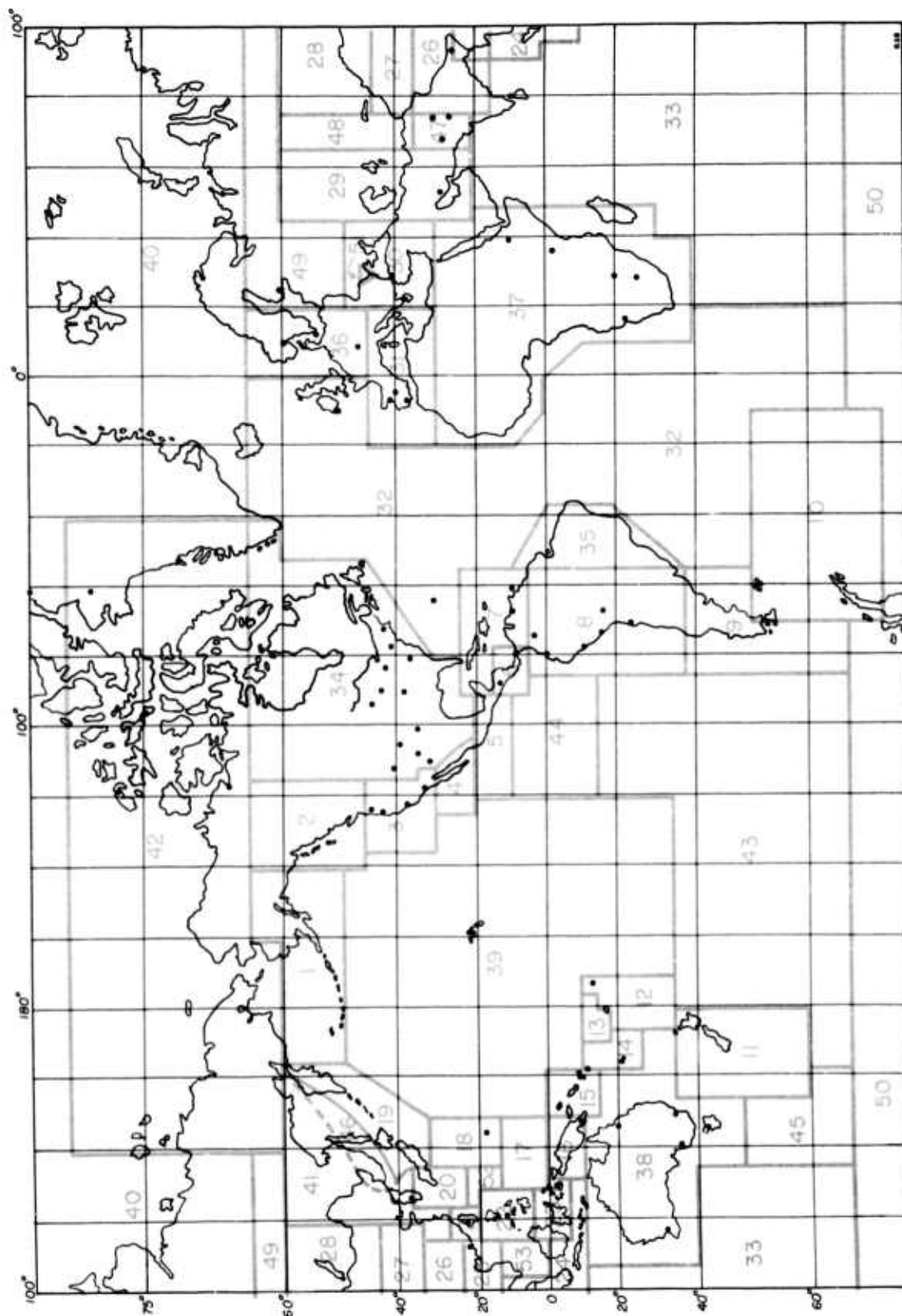


Figure 9. Seismic Regions\* and Location of Seismograph Stations Used in 1963  
 \*(Adapted from Gutenberg and Richter, 1954)

Similar observations as the preceding hold true for Region 4. Only shallow earthquakes are observed, with most of those observed in 1963 occurring at the northern end of the Gulf of California and on the adjacent mainland. Shallow shocks in this region were about 0.2 percent of the worldwide totals ( $M \geq 5.0$ ). Activity in 1960 was somewhat greater (0.3 percent) and for both years, less than Gutenberg and Richter's mean annual numbers.

Regions 5 and 6 include Southern Mexico and Central America. Seismic activity follows along the coast lines of this area in typical arcuate structure of Pacific activity. Intermediate depth earthquakes occur in the southern part of this arc and epicenters exhibit little or no lateral separation from the shallow epicenters. Thus, the plane defined by the hypocenters is nearly vertical in this region. Figures 12 and 13 show epicenters in these regions.

Activity in the range  $M \geq 5.0$  is less than half that of 1960 for both shallow and intermediate depth. Percentages in 1963 were 2.1 and 3.5 and in 1960, 4.3 and 8.8 for shallow and intermediate activity ( $M \geq 5.0$ ). Thus, in 1963, intermediate activity was about that shown by Gutenberg and Richter while shallow activity was considerably less. In 1960, shallow activity was still less than that given by Gutenberg and Richter and intermediate, considerably more.

Region 7 is the Caribbean loop. In 1963, activity in this region occurred principally in Colombia. Some intermediate shocks were located in Colombia and in the Windward Islands. About 0.1 percent of shallow and 2.2 percent of shallow and intermediate earthquakes ( $M \geq 5.0$ ) were located in this region. In 1960 the percentages were 1.5 and 0.9, respectively.

The Andean zone stretches from Colombia to southern Chile and includes Regions 8 and 9. Figures 14 and 15 show epicenters in Regions 8 and Figures 16 and 17 show epicenters in Region 9, for 1963. Deep-focus shocks as well as shallow and intermediate were located in Region 8 (to 37 degrees south latitude); while in 1963, only shallow earthquakes occurred. A progressive landward displacement may be observed in the epicenters except in Argentina, where both intermediate and shallow epicenters are found in the same areas. The assumption to be made here is that generally, the plane defined by hypocenters does not dip as sharply as observed in the Aleutians and Central America.



In 1960 the activity in Region 9 was the primary feature of the seismicity map. However, in 1963 comparatively little activity is noted in this area. A dramatic comparison can be made in the numbers of shallow shocks ( $M \geq 5.0$ ) recorded in each year — 230 in 1960 and only 10 in 1963. The Andean zone as a whole in 1963 made up 4.9 percent of the shallow activity, 9.7 percent of the intermediate and 2.8 percent of the deep. In 1960 the comparable figures were 19.8, 15.0 and 0.0 percent. Shallow activity exceeded Gutenberg and Richter's mean annual values in both years, although not greatly so in 1963. Shocks deeper than normal were less compared to Gutenberg and Richter's data in both years.

Region 10 is included in the circum-Pacific as a loop similar to the Caribbean loop by Gutenberg and Richter (1954), although it would appear more closely connected with the mid-Atlantic ridge based on 1963 data. Activity is centered in the Sandwich Islands, where three intermediate shocks were located in 1963. Shallow shocks in the southern Antilles were 2.1 percent of the worldwide totals ( $M \geq 5.0$ ) and intermediate 1.1 percent.

The eastern and southern Pacific activity (Regions 43 and 44) was restricted to the oceanic ridges and rises, as discussed in the worldwide results. Only shallow shocks ( $M \geq 5.0$ ) were located in these regions in 1963 and these were 2.7 percent of such worldwide activity. This represents an increase over 1960 and about the same as that found by Gutenberg and Richter.

Region 11 includes the area from the Macquarie Islands to New Zealand. The only intermediate depth activity occurs in New Zealand. In 1963, more activity was found in the Macquarie Islands area. New Zealand experienced little seismic activity in 1963. Percentages for the region were 0.4 and 1.1 for shallow and intermediate depths, respectively.

Regions 12 and 13 include two arcs at about right angles. The larger and most active trends northward from New Zealand through the Kermadec and Tonga Islands to the Samoa Islands. The other trends westward from the Samoa Islands through the Fijis to the New Hebrides. Epicenter plots for these regions are shown in Figures 18 and 19. Intermediate and deep-focus shocks occur mainly in the north-south arc. Here again, we see the feature of lateral separation of shallow, intermediate and deep focus epicenters. The separation appears intermediate between that in South America and in the Aleutians and the deeper focus shocks occur away from the Pacific side of the arc.

Shallow activity is somewhat decreased from the level of 1960 while intermediate and deep-focus activity is increased. Percentages for 1963 are 16.4, 13.5 and 73.8 for shallow, intermediate and deep-focus activity.

In 1960 similar figures were 16.7, 10.6 and 69.1. Both years' data indicate considerably higher activity than the data of Gutenberg and Richter (1954).

The New Hebrides to Loyalty Islands arc is included in Region 14. This arc is concave toward the Pacific and trends generally north-south. Here, shallow activity appears greatest on the west side of the arc, intermediate-focus epicenters lie along about the same portion of the arc and, in 1963, deep-focus shocks were located to the east, or Pacific side of the arc, reversing the usual situation in Pacific structures. Epicenters in this region are shown in Figures 20 and 21.

Percentages of worldwide activity ( $M \geq 5.0$ ) in Region 14 during 1963 were 3.1, 10.9 and 0.9 for shallow, intermediate and deep focus, respectively. This compares with 4.3, 6.6 and 0.0 in 1960. Shallow and intermediate activity appears less than Gutenberg and Richter's mean values and deep-focus activity about the same.

From the Solomon Islands through New Guinea (Regions 15 and 16) three separate arcs of activity were observed. All trend more or less east-west. Shallow activity was greatest in the easternmost arc while that deeper-than-normal was observed mostly in the center arc, the New Britain area. This intermediate and deep-focus activity is again located on the side of the arc away from the Pacific with little lateral separation in epicenters from shallow through deep-focus earthquakes. Thus in this area, the plane defined by hypocenters is dipping quite sharply. Epicenters in these regions are shown in Figures 22 and 23.

Percentages of worldwide activity in 1963 ( $M \geq 5.0$ ) were 6.5, 13.0 and 2.8 for shallow, intermediate and deep focus, respectively. In 1960 the percentages were 5.9, 11.5 and 4.9. In comparison to Gutenberg and Richter's mean annual numbers, shallow activity was less in both years, intermediate considerably higher and deep about the same.

Region 23 is an area of considerable complexity. It includes the Celebes, Moluccas and Ceram. Epicenters for the region and some adjacent areas are shown in Figures 24 and 25. Seismic activity occurred along a series of intersecting arcs: one stretches from Mindanao through Halmahera, the Molucca Passage and Ceram, connecting with the New Guinea activity; an arc along northern Celebes intersects the first arc at Halmahera; and also the eastern end of the Sunda arc intersects the first arc in the southeastern Banda Sea. Shallow activity was greatest in the Halmahera-Molucca Passage area in 1963. Intermediate activity was greatest in the southern Banda Sea where some deep-focus earthquakes were located. Considerable intermediate depth shocks were located north of Halmahera, also.

Percentages in 1963 ( $M \geq 5.0$ ) were 4.4, 11.2 and 1.9 for shallow, intermediate and deep, respectively. In 1960 these percentages were 5.6, 2.2 and 1.2. Comparing with Gutenberg and Richter's mean annual values, it is seen that 1963 and 1960 shallow activity was somewhat higher, 1963 intermediate activity considerably higher and in 1960 about equal to the average, while deep-focus activity was also higher in both years.

In the Philippines (Region 22) two arcs were observed: one convex toward the Pacific along eastern Mindanao and Samar; and another concave along western Luzon, extending up to Formosa. Both shallow and intermediate activity were concentrated in the southern end of the first arc and the northern end of the second arc. Some deep-focus shocks were located in south Mindanao. Figures 26 and 27 show the epicenters in the Philippines during 1963.

Percentages of worldwide activity ( $M \geq 5.0$ ) in 1963 were 2.1, 3.4 and 0.9 for shallow, intermediate and deep, respectively. In 1960 these percentages were nearly the same, namely 2.4, 3.1 and 1.2. In comparison to Gutenberg and Richter's values, these represent low shallow activity, normal for intermediate and high activity for deep focus.

Region 21 includes Formosa where the concave arc from Luzon terminates and a convex (toward the Pacific) arc begins, extending up the Ryukyus. Activity is centered off the east coast of Formosa and is mostly shallow focus. In 1963 about 1.2 percent of the shallow and 0.4 percent of the intermediate shocks ( $M \geq 5.0$ ) were located in Region 21.

The Ryukyu arc extends northward along the east coast of Kyushu and shallow earthquakes generally occur along the east side of the arc, although a few are located a considerable distance to the west in the East China Sea. Intermediate depth epicenters are generally to the west of the shallow, as usual in Pacific structures. Percentages in 1963 were 1.0, 1.1 and 0.9 for shallow, intermediate and deep, respectively. In 1960 these percentages were 0.9, 2.6 and 0.0. These data reflect lower-level seismicity than that given by Gutenberg and Richter. Figures 28 and 29 show epicenters in the region during 1963.

From southern Honshu southward, an arc concave to the Pacific extends down to the Marianas and a second arc, convex to the Pacific, continues down through the Caroline Islands. Regions 17 and 18 include these arcs. The Mariana Islands constitute the most active part of these regions. Shocks of all depth classifications occur throughout the arcs. The usual Pacific feature of lateral separation of the deeper earthquake epicenters away from the Pacific may be observed. In 1963 the two regions had 2.1, 3.7 and 5.6 percent of the shallow, intermediate and deep-focus activity ( $M \geq 5.0$ ). In 1960 these percentages were 2.0, 4.0 and 7.4, representing

little difference in the two years' data. Gutenberg and Richter's data indicates somewhat higher shallow and intermediate activity than in 1960 and 1963 but about the same level for deep. Figures 30 and 31 picture epicenter locations in Regions 17 and 18.

Region 19 includes Japan (except Kyushu), the Kuriles and Kamchatka. Epicenters in Japan are shown in Figures 32 and 33. The greater activity is from central Honshu to southern Hokkaido along an arc convex to the Pacific. Shallow shocks cluster along the eastern side of the arc and intermediate depth epicenters are located west of the shallow. Deep shocks are located in the Sea of Japan and eastern Manchuria (Region 46) and are usually considered as structurally related to the shallow and intermediate earthquakes even though they appear isolated from the latter on epicenter maps.

Another convex arc begins east of Hokkaido and extends through the Kuriles and eastern Kamchatka. Epicenters along this arc are shown in Figures 34 and 35. In 1963 this arc was considerably more active than Japan. A large earthquake swarm occurred in the Kuriles in 1963 from about 44 to 47 degrees north latitude and 148 to 155 degrees east longitude, and was the most seismic area in that year. Other activity in the region occurred east of central Kamchatka along the Komandorskie Islands trending toward the Aleutians. The typical Pacific feature of intermediate and deep shocks located away from the Pacific was also noted here in 1963.

Percentages of worldwide activity in Region 19 (and 46) as a whole were 24.8, 9.0 and 3.7 for shallow, intermediate and deep, respectively. In 1960 these percentages were 8.0, 9.7 and 4.9. Compared to Gutenberg and Richter's data, 1963 activity was quite high for shallow, low for intermediate and quite low for deep. The 1960 shallow activity was somewhat low and other activity about the same as 1963.

## 2. Alpide Belt

The Sunda arc is included with the circum-Pacific by Gutenberg and Richter, although it does not front on the Pacific; probably because it is a Pacific-type structure. It extends from the Lesser Sunda Islands through Java and Sumatra to the Nicobar and Andaman Islands. Epicenters in 1963 show a wide gap between the Andaman Islands and Burma which was not so great in 1960. For this reason, it appears in this study that it is just likely to be included in the Alpide belt as the circum-Pacific.

In 1963, southern Sumatra and western Java were the most active areas in this region (Region 24). Considerable deep-focus activity was located north of Java while intermediate activity was along the arc and

south of Java. Percentages of worldwide activity ( $M \geq 5.0$ ) in 1963 were 3.4, 9.0 and 4.7 for shallow, intermediate and deep, respectively. In 1960, these were 2.7, 4.0 and 3.7. Shallow activity was low both in 1963 and 1960, intermediate was normal in 1963, low in 1960 and deep was normal for both years, as compared to Gutenberg and Richter's data.

Excluding the Sunda arc, the Alpidic belt begins in northern Burma and trends along the Himalayas to the Hindu Kush. Regions 25 and 26 include these areas. Some intermediate activity occurred in northern Burma in 1963 although most activity was shallow. The shallow activity was greatest in northern Burma and the India-Tibet-Kashmir areas. Percentages of worldwide activity ( $M \geq 5.0$ ) were 0.8 and 0. in 1963 and 1.5 and 2.2 in 1960 for shallow and intermediate, respectively.

Region 48 includes the Hindu Kush and the eastern part of Central Asian USSR. Figures 36 and 37 show epicenters in the region in 1963. The Hindu Kush occurs at the intersection of the Himalayan and Baluchistan arcs. Northeast of the Hindu Kush is the Pamir-Baikal block faulting zone. Shallow epicenters to the north in Figure 36 are associated with the latter zone and are the principal source of shallow activity in the USSR within Region 48, which is the most seismic area of mainland USSR (i. e., excluding Kamchatka and the Kuriles). Percentages of worldwide activity in 1963 were 0.4 and 3.4 for shallow and intermediate, respectively. In 1960 these percentages were 0.9 and 5.7. Intermediate activity was low in 1963 and about normal in 1960, compared to Gutenberg and Richter's data. Shallow activity was about normal in each year.

Region 29 includes Iran and the immediate vicinity, including the Kopet-Dag area of the USSR. A gap is shown in the Alpidic belt between the Hindu Kush and eastern Iran-USSR border region. In the latter area, a small amount of activity is shown in Figure 38 during 1963 while in 1960 no epicenters for shocks  $M \geq 4.0$  were located here. Principal activity in Region 29 was along the north shore of the Persian Gulf. Activity observed east of this in 1960 was not observed in 1963. One intermediate shock of  $M \geq 5.0$  was located in the region in 1963. Percentages of worldwide activity were 1.0 and 0.4 in 1963 and 2.4 and 0.4 in 1960 for shallow and intermediate, respectively. Compared to Gutenberg and Richter's data, 1963 activity was low and 1960 normal.

The eastern Mediterranean and Turkey are included in Region 30. Epicenters in the region are plotted in Figures 39 and 40. Principal activity, both shallow and intermediate, occurred along the coasts of Yugoslavia, Albania and Greece as well as in Cyprus. Some intermediate activity also occurred at the southwest coast of Turkey. Little activity in this region in 1963 was within the territory of the USSR. Percentages of

worldwide shallow activity ( $M < 5.0$ ) were 1.0 in 1963 and 2.2 in 1960. Low for 1963 and normal for 1960 compared to Gutenberg and Richter's data.

The western end of the Alpidic belt includes activity in northern Italy and the North African coast. This is included in Region 31. Percentages of activity were 0.4 and 0.0 in 1963 and 0.6 and 0.4 in 1960 for shallow and intermediate, respectively, somewhat high in both years compared to Gutenberg and Richter's data.

### 3. Oceanic Ridges

As has been discussed, the mid-Atlantic ridge was well defined by seismic activity in 1963 and fairly well distributed throughout its length. In 1963 the percentage of shallow activity was 3.0 and in 1960 was 2.2. Both years represent low activity compared to Gutenberg and Richter's data.

Indian Ocean ridges and rises were also rather well defined by shallow seismic activity in 1963. Distribution of the shocks was covered in the worldwide discussion. In 1963 the percent of worldwide activity was 1.6 and in 1960 it was 1.2. Compared to Gutenberg and Richter's data, both years represent low activity for the region.

The Arctic belt (Region 40) was well defined from Iceland to about 80 degrees north latitude. Little activity was observed from that point into Siberia. In 1963, about 1.1 percent of shallow activity occurred in this belt and only 0.4 percent in 1960. The 1960 level is about normal in comparison with the Gutenberg and Richter data.

### 4. Non-Alpidic Asia

The Pamir-Baikal zone was active up to about the Mongolia-China border in 1963 and some activity was located around Lake Baikal and northern Mongolia. Some activity was also located along the mountain ranges in western China. Percentages of worldwide shallow activity were 1.2 and 0.7 in 1963 and 1960, respectively. Both years appear to have been low compared to the Gutenberg and Richter data.

### 5. Others

The remainder of the active seismic areas of the world are located in or near stable areas and shocks are generally small. These areas include North America, except the west coast, western South America, central Europe, the bulk of the USSR, Africa, the Arabian Peninsula and Australia.

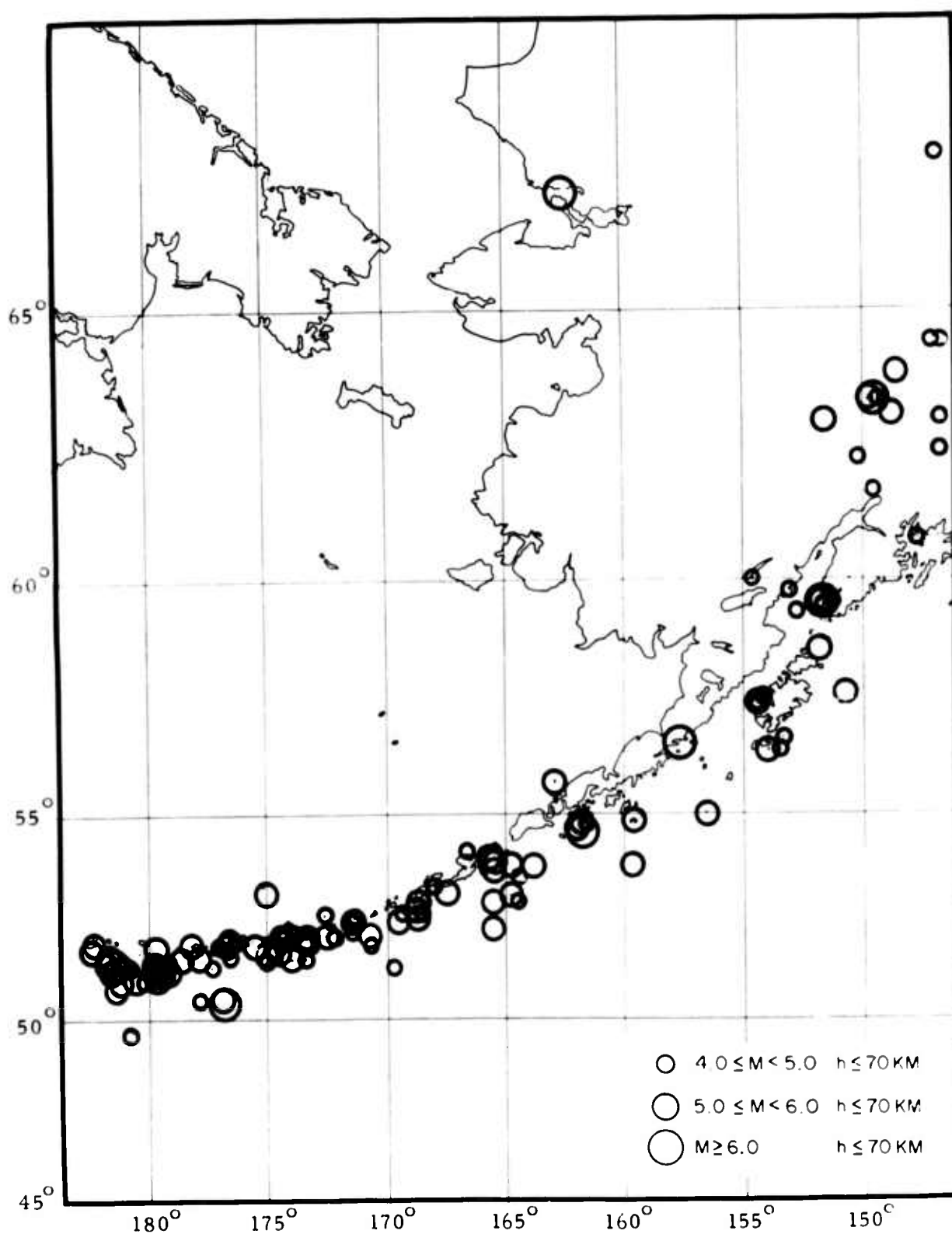


Figure 10. Earthquake Epicenters in Alaska and the Aleutian Islands  
During 1963 ( $h < 70$  km)



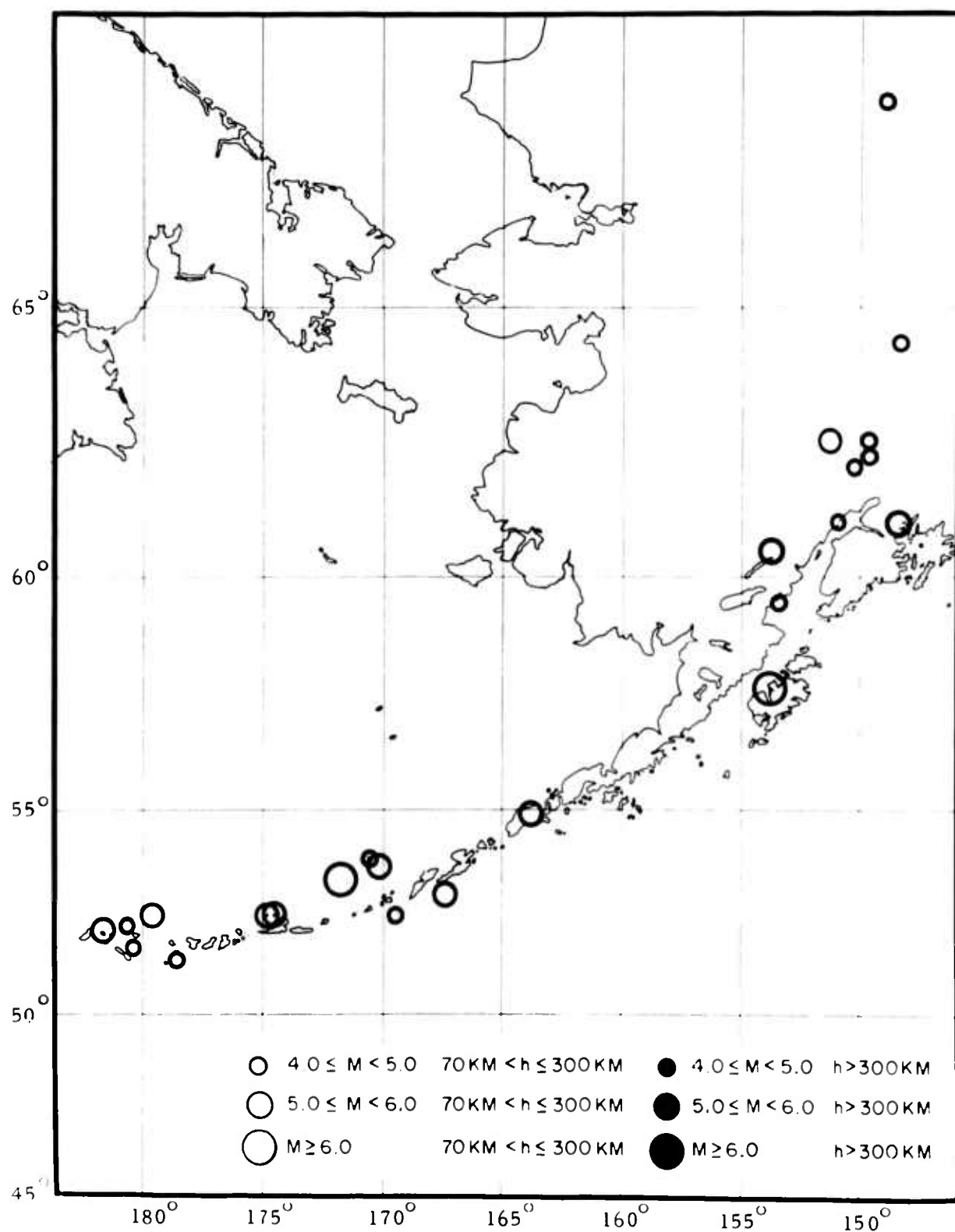


Figure 11. Earthquake Epicenters in Alaska and the Aleutian Islands  
During 1963 ( $h > 70$  km)

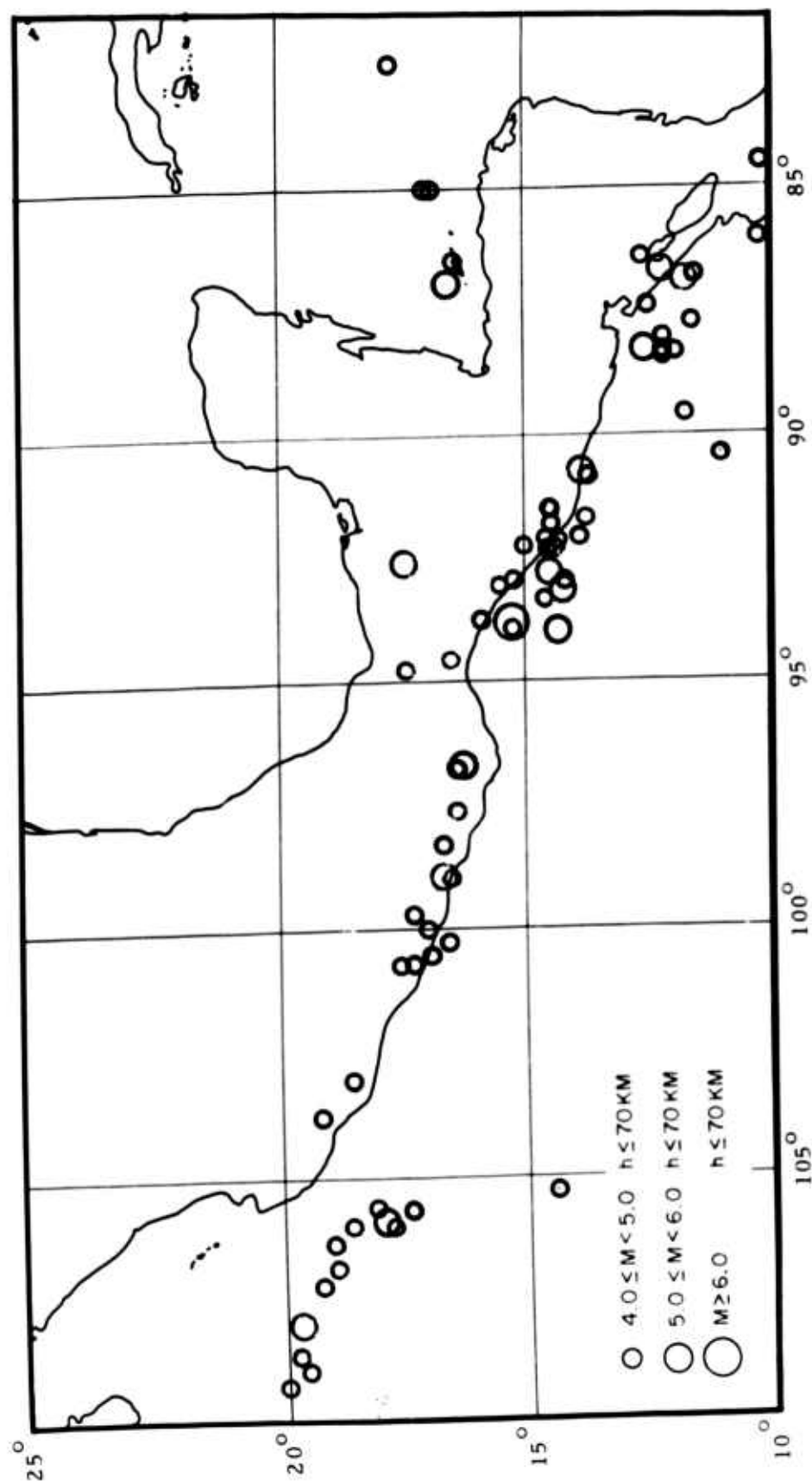


Figure 12. Earthquake Epicenters in Mexico and Central America During 1963 ( $h \leq 70 \text{ km}$ )

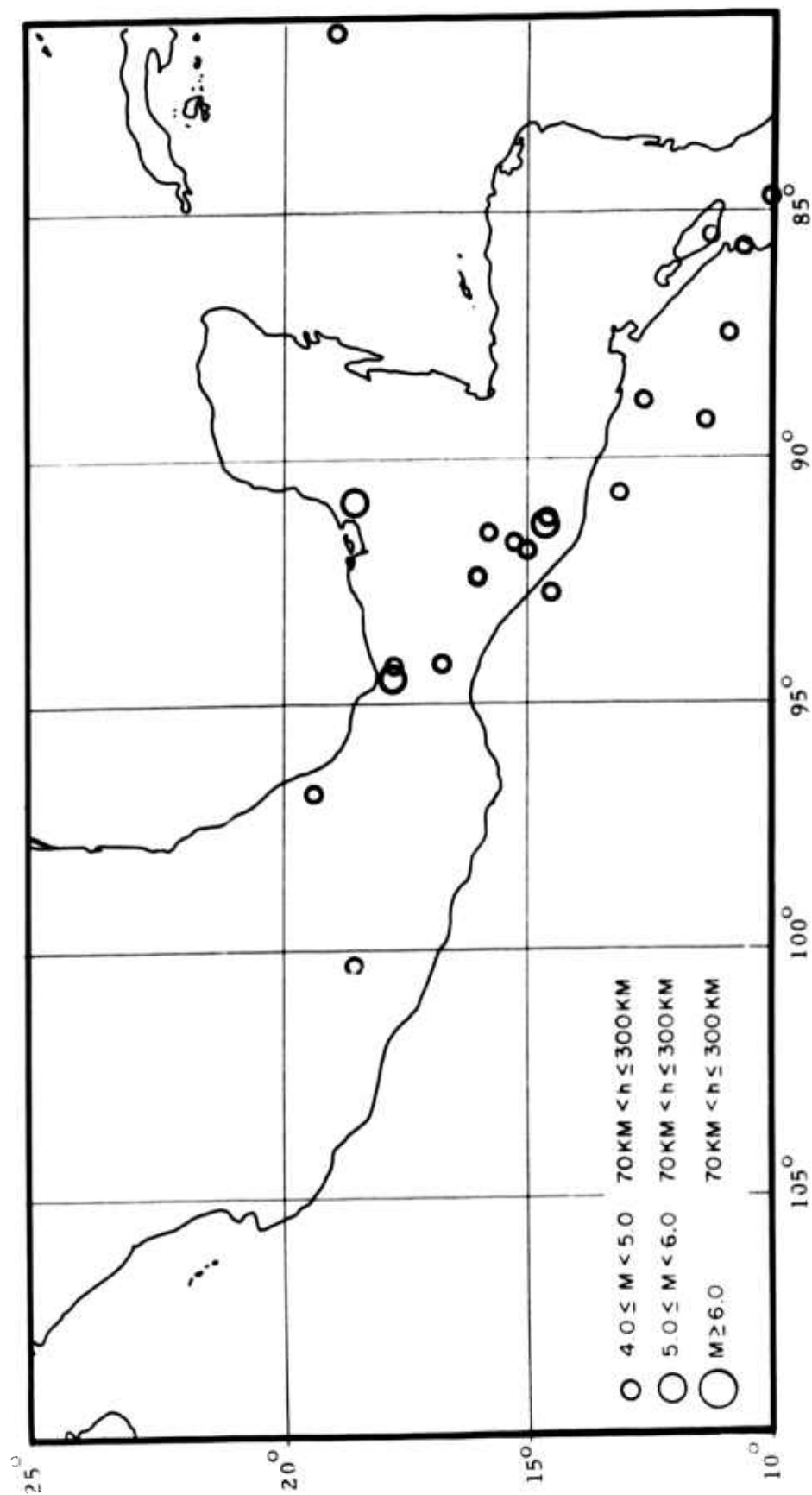


Figure 13. Earthquake Epicenters in Mexico and Central America  
During 1963 ( $h > 70$  km)

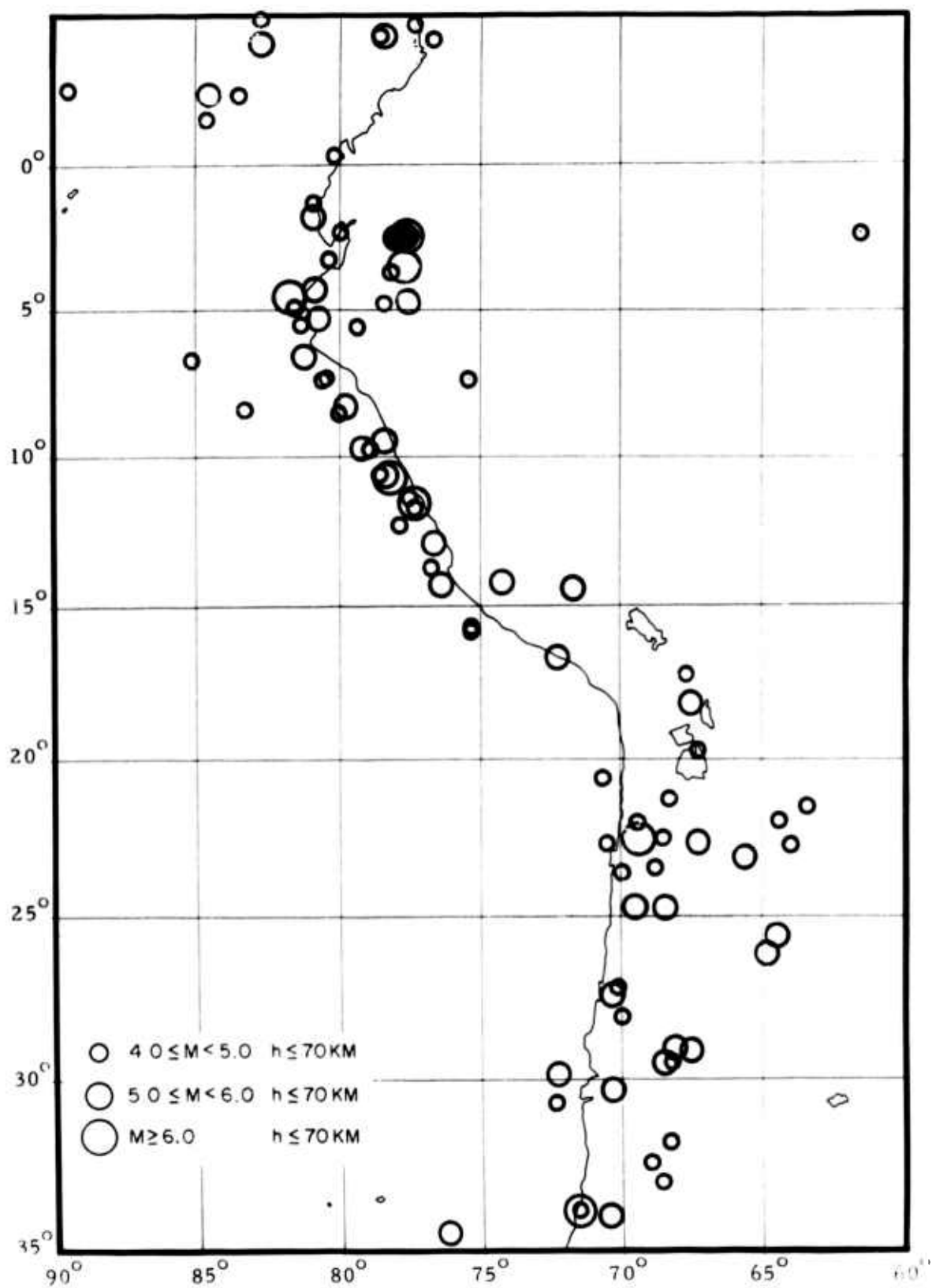


Figure 14. Earthquake Epicenters in Western South America  
During 1963 ( $h < 70 \text{ km}$ )

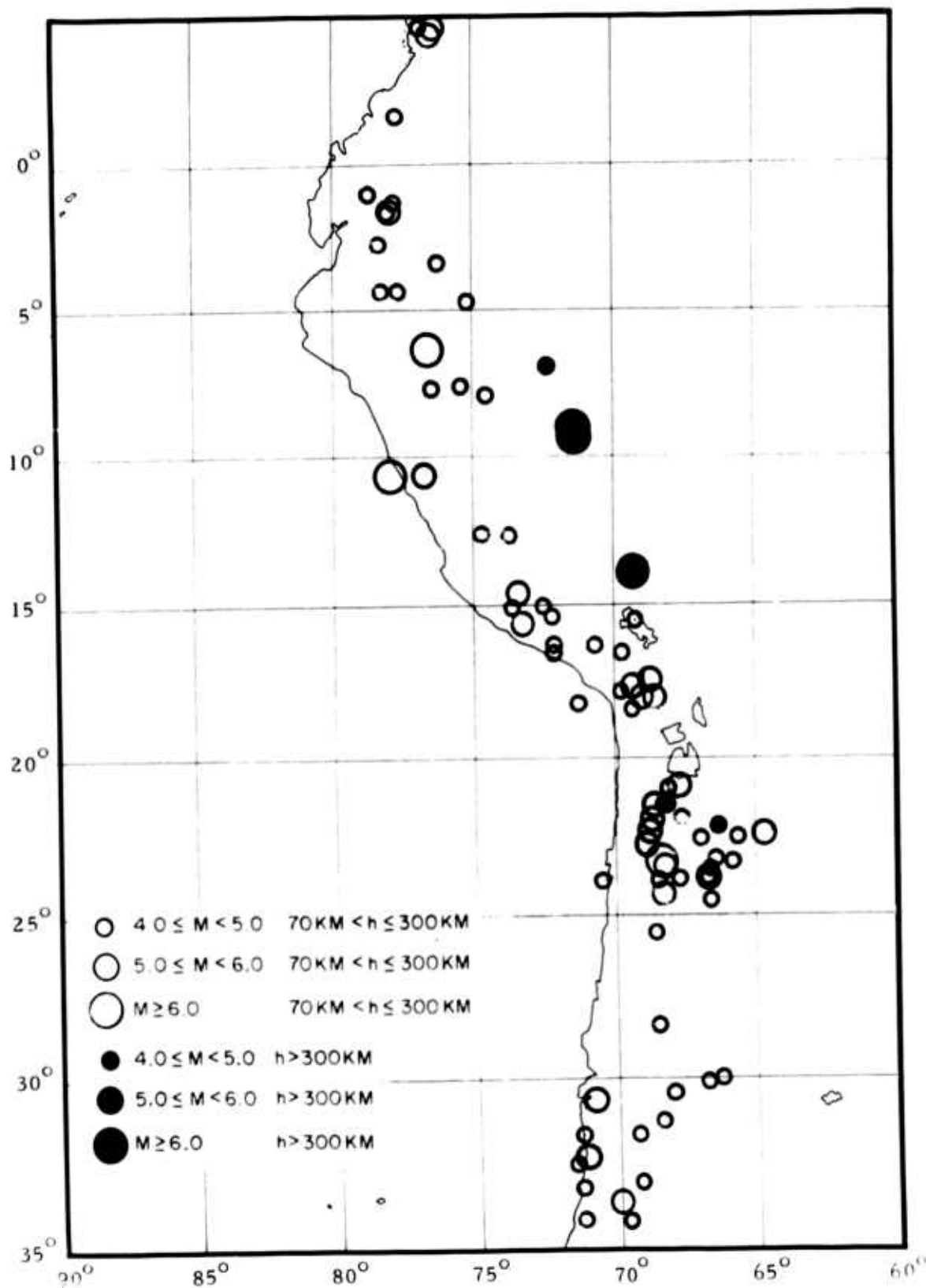


Figure 15. Earthquake Epicenters in Western South America  
During 1963 ( $h > 70$  km)

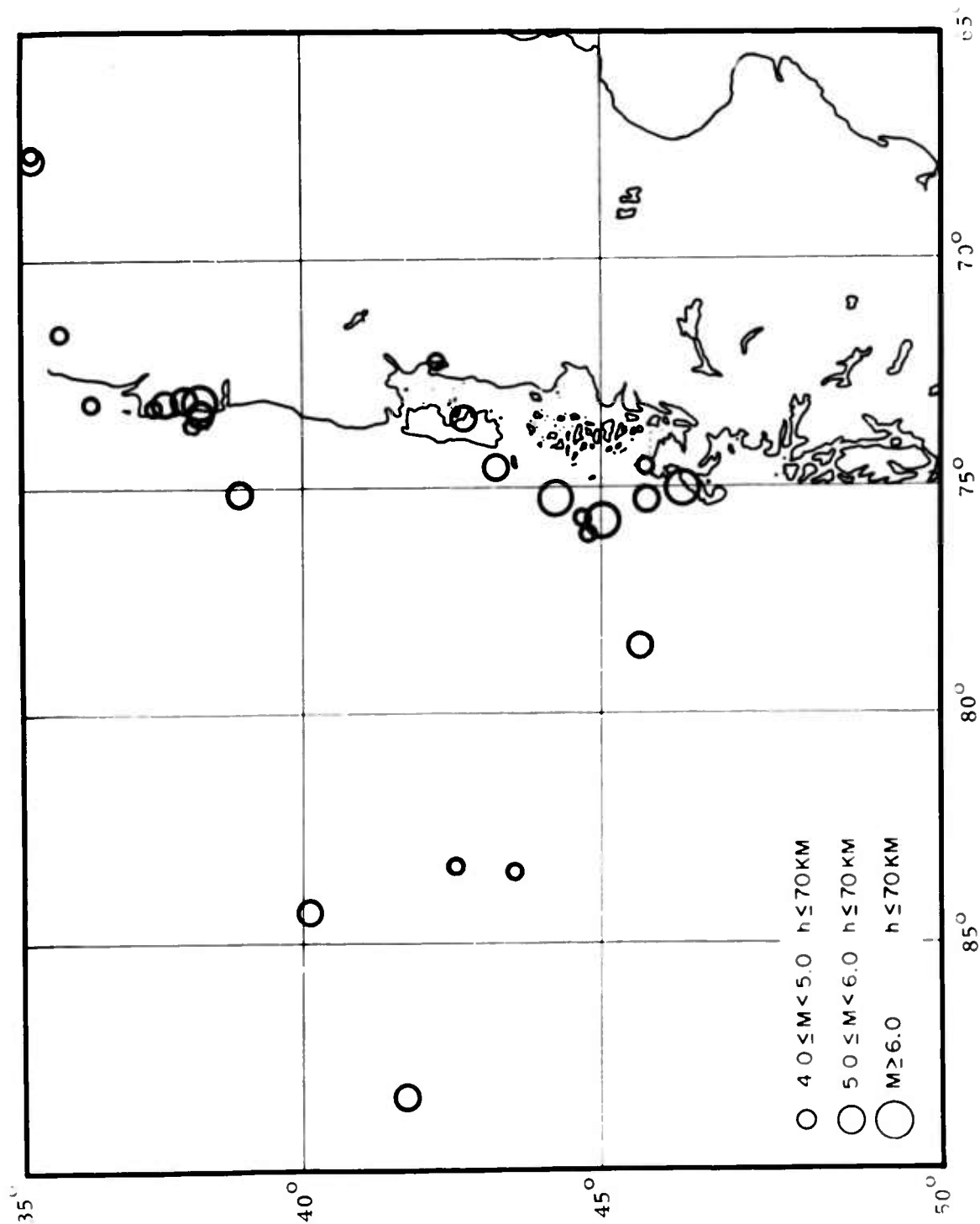


Figure 16. Earthquake Epicenters in Southern South America  
During 1963 ( $h = 70 \text{ km}$ )

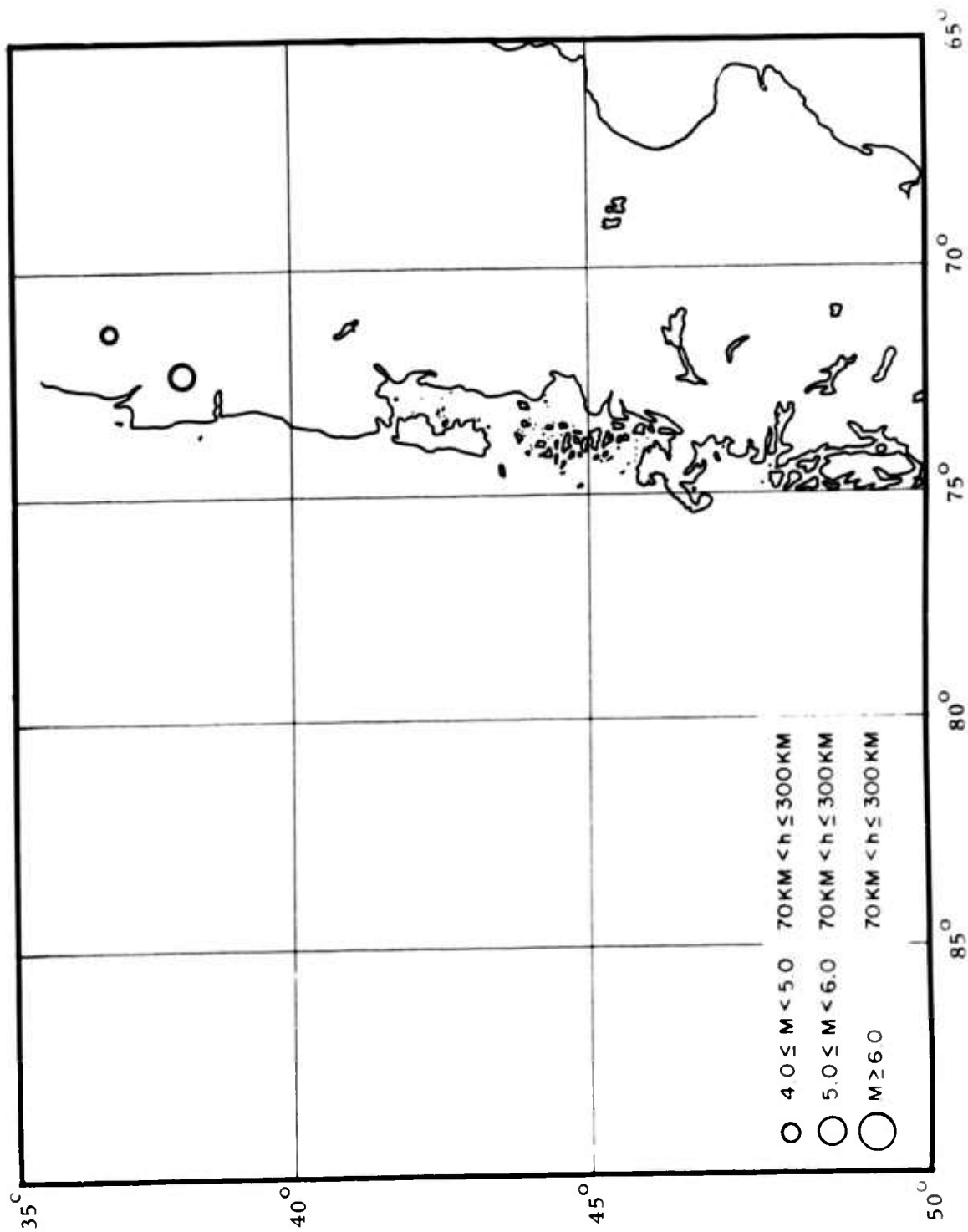


Figure 17. Earthquake Epicenters in Southern South America During 1963 ( $h > 70$  km)



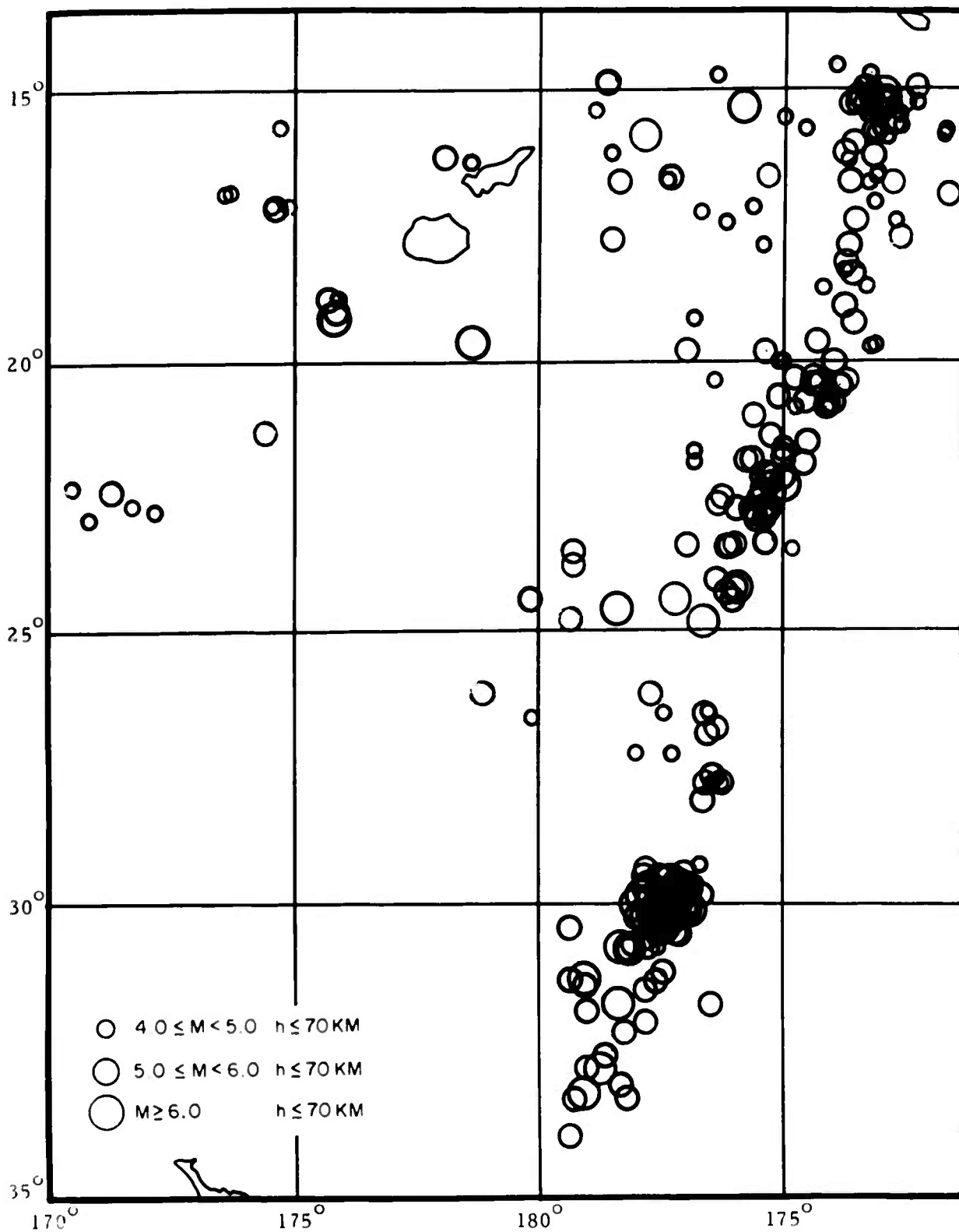


Figure 18. Earthquake Epicenters in the Fiji to Kermadec Islands  
During 1963 ( $h \leq 70 \text{ km}$ )

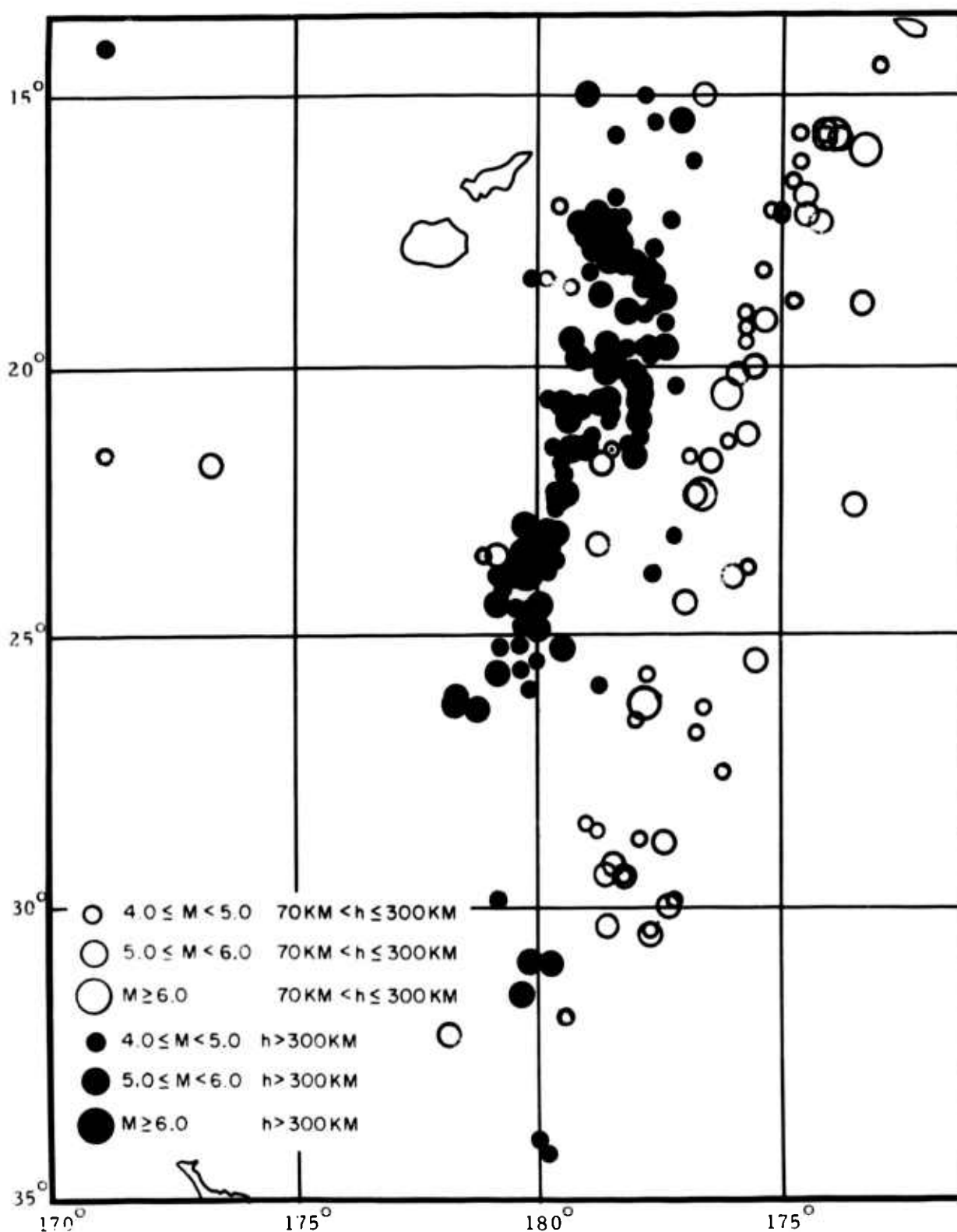


Figure 19. Earthquake Epicenters in the Fiji to Kermadec Islands  
During 1963 ( $h > 70$  km)

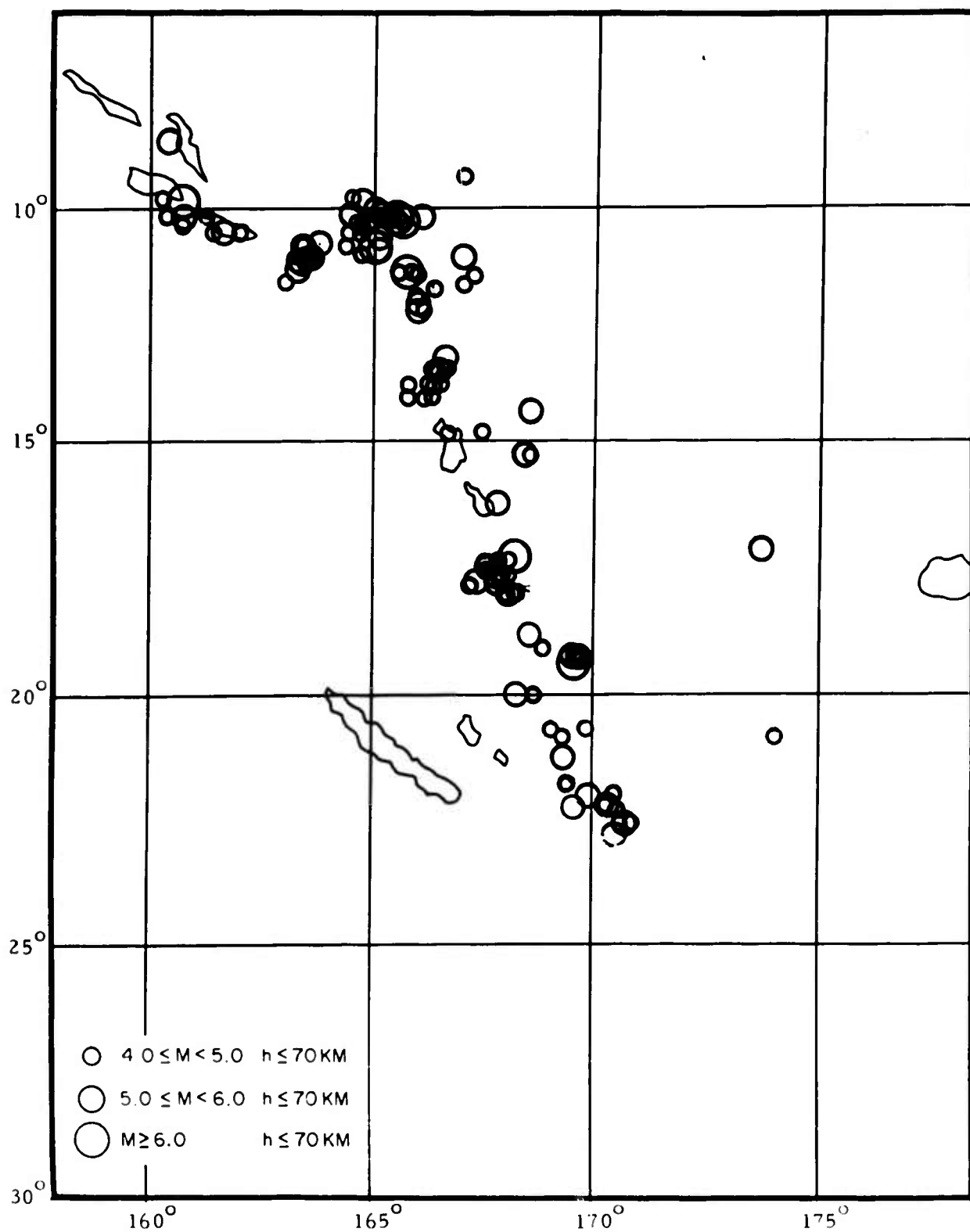


Figure 20. Earthquake Epicenters in the New Hebrides and Loyalty Islands During 1963 ( $h \leq 70 \text{ km}$ )

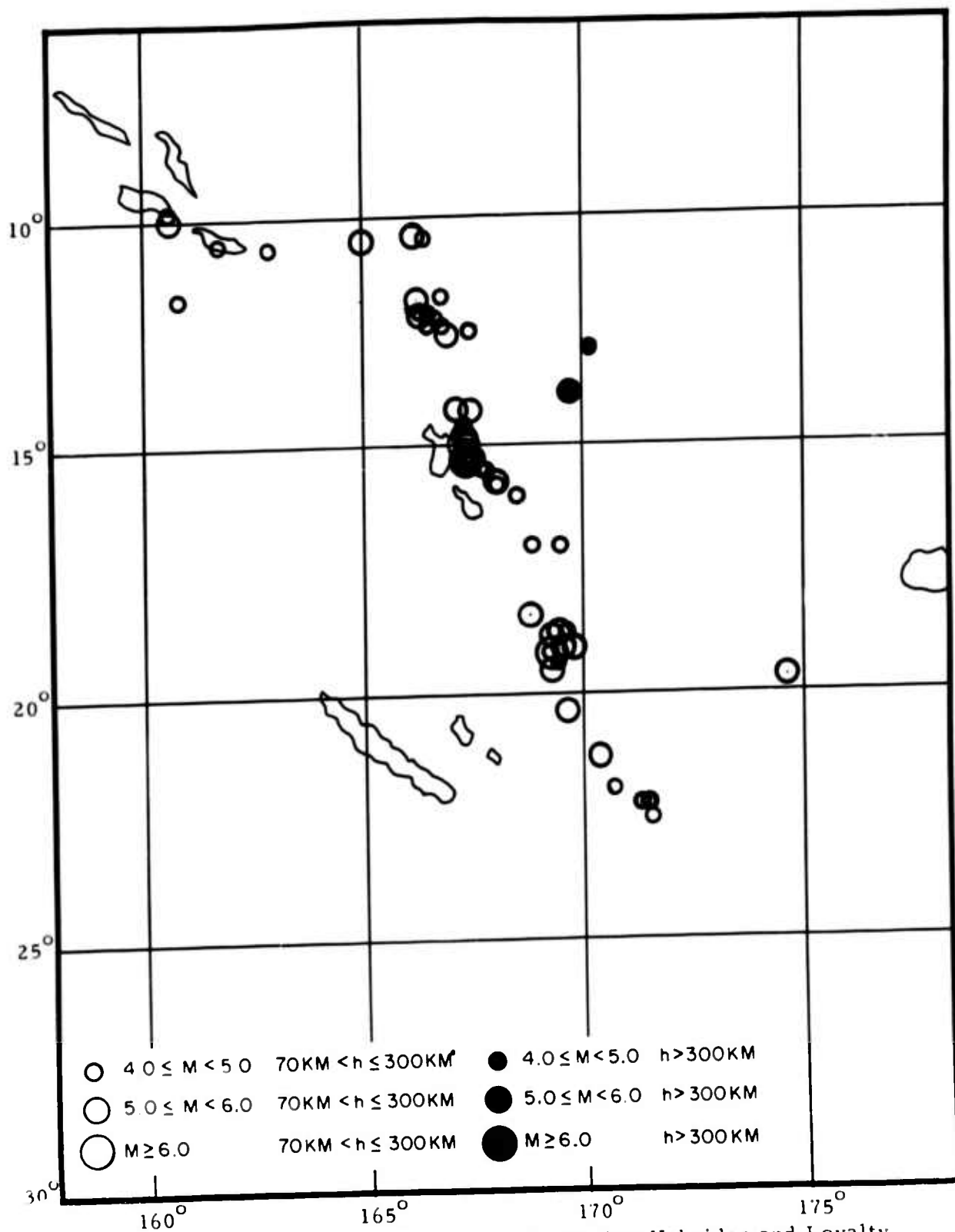


Figure 21. Earthquake Epicenters in the New Hebrides and Loyalty Islands During 1963 ( $h > 70$  km)

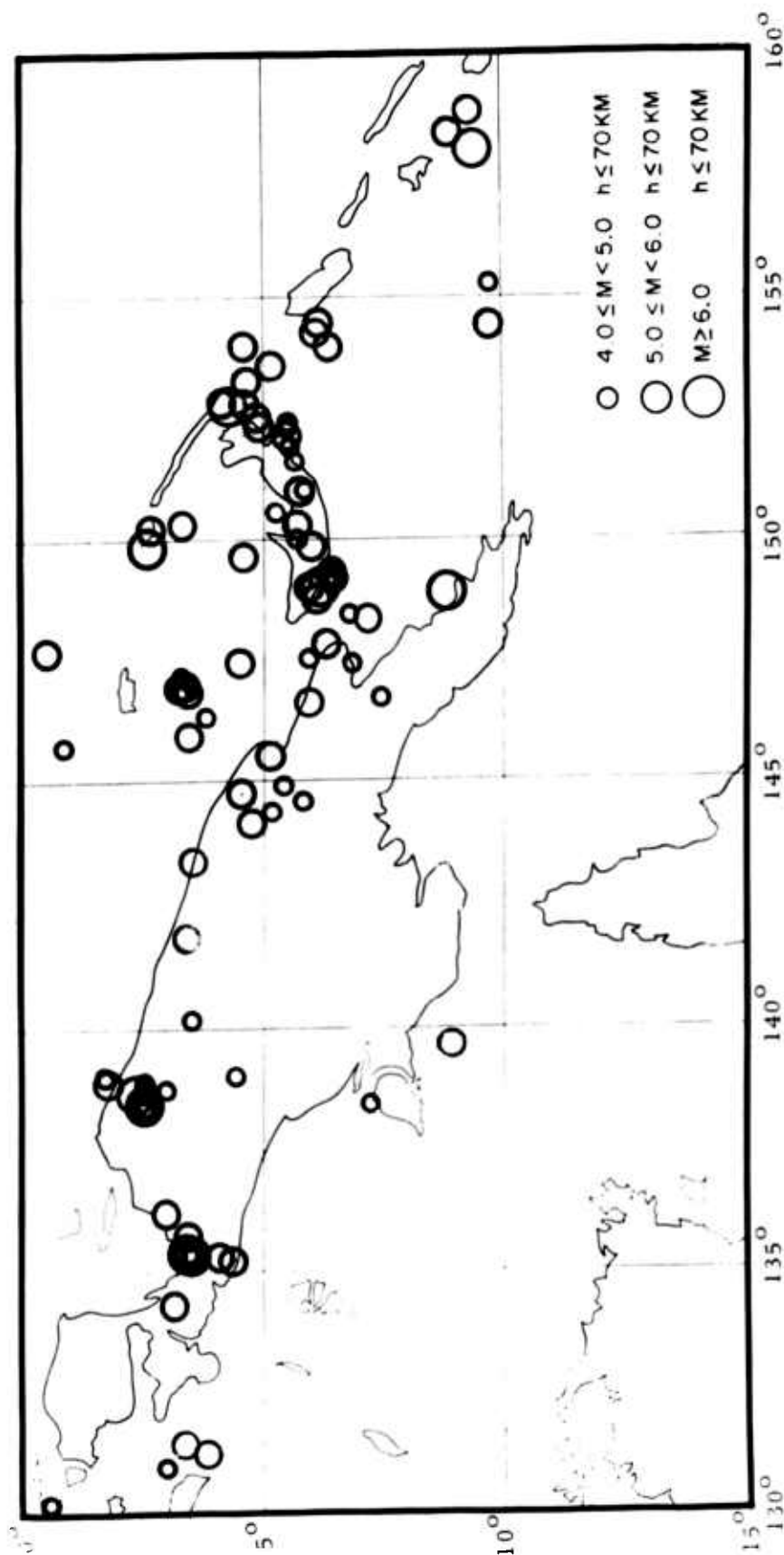


Figure 22. Earthquake Epicenters in the Solomon Islands and New Guinea During 1963 ( $h \leq 70 \text{ km}$ )

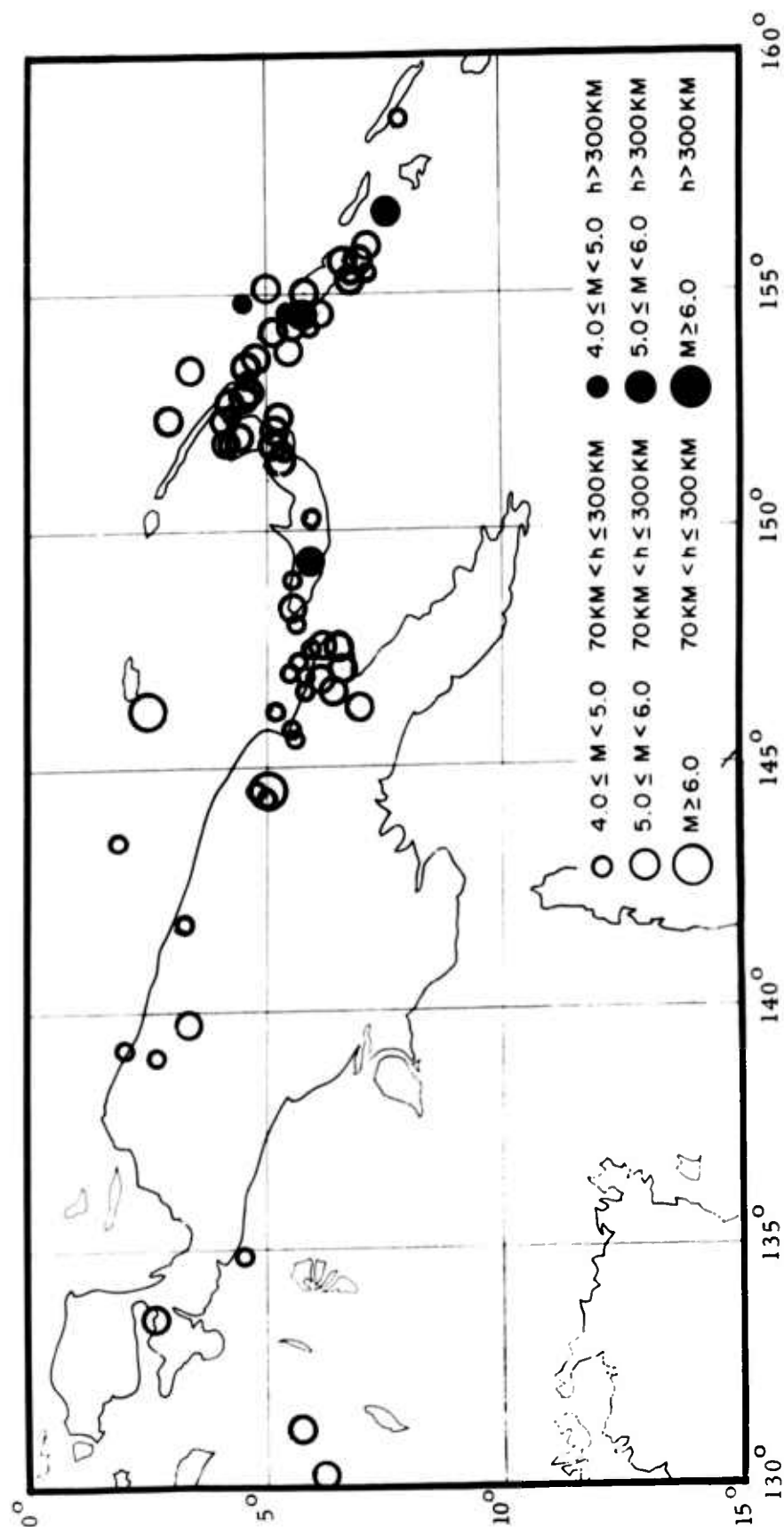


Figure 23. Earthquake Epicenters in the Solomon Islands and New Guinea During 1963 ( $h > 70$  km)

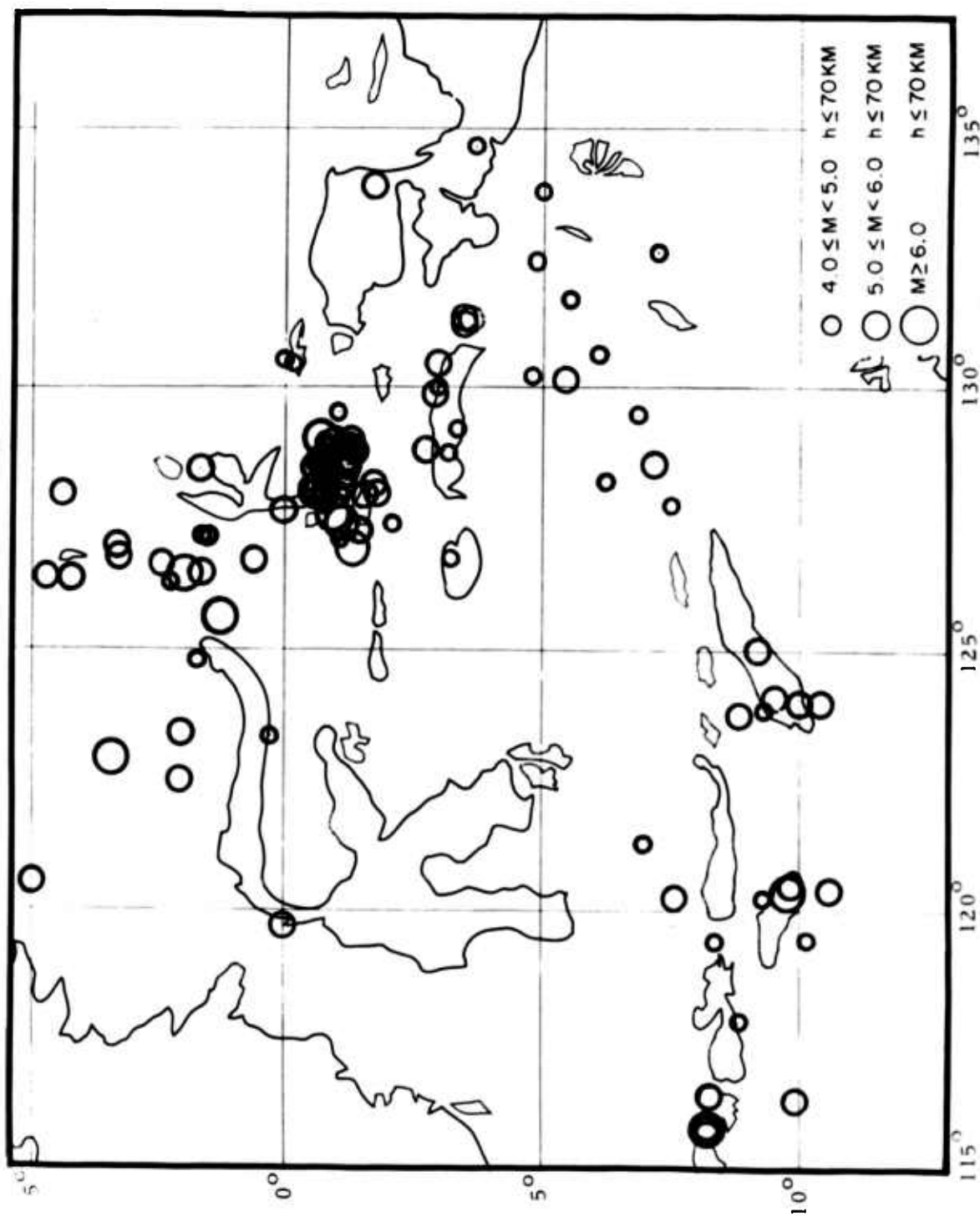


Figure 24. Earthquake Epicenters in the Celebes During 1963  
(h - 70 km)

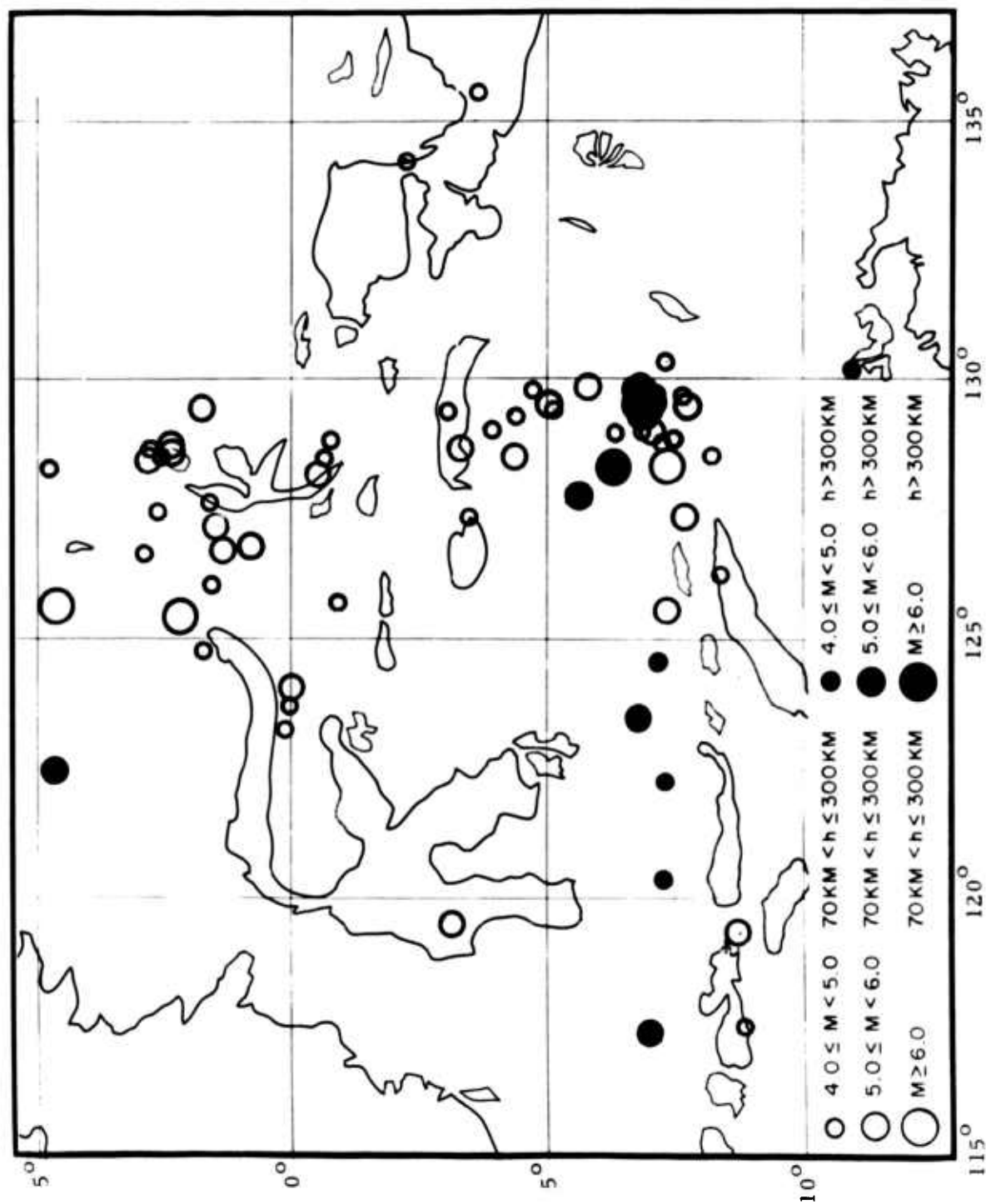


Figure 25. Earthquake Epicenters in the Celebes During 1963  
(h > 70 km)



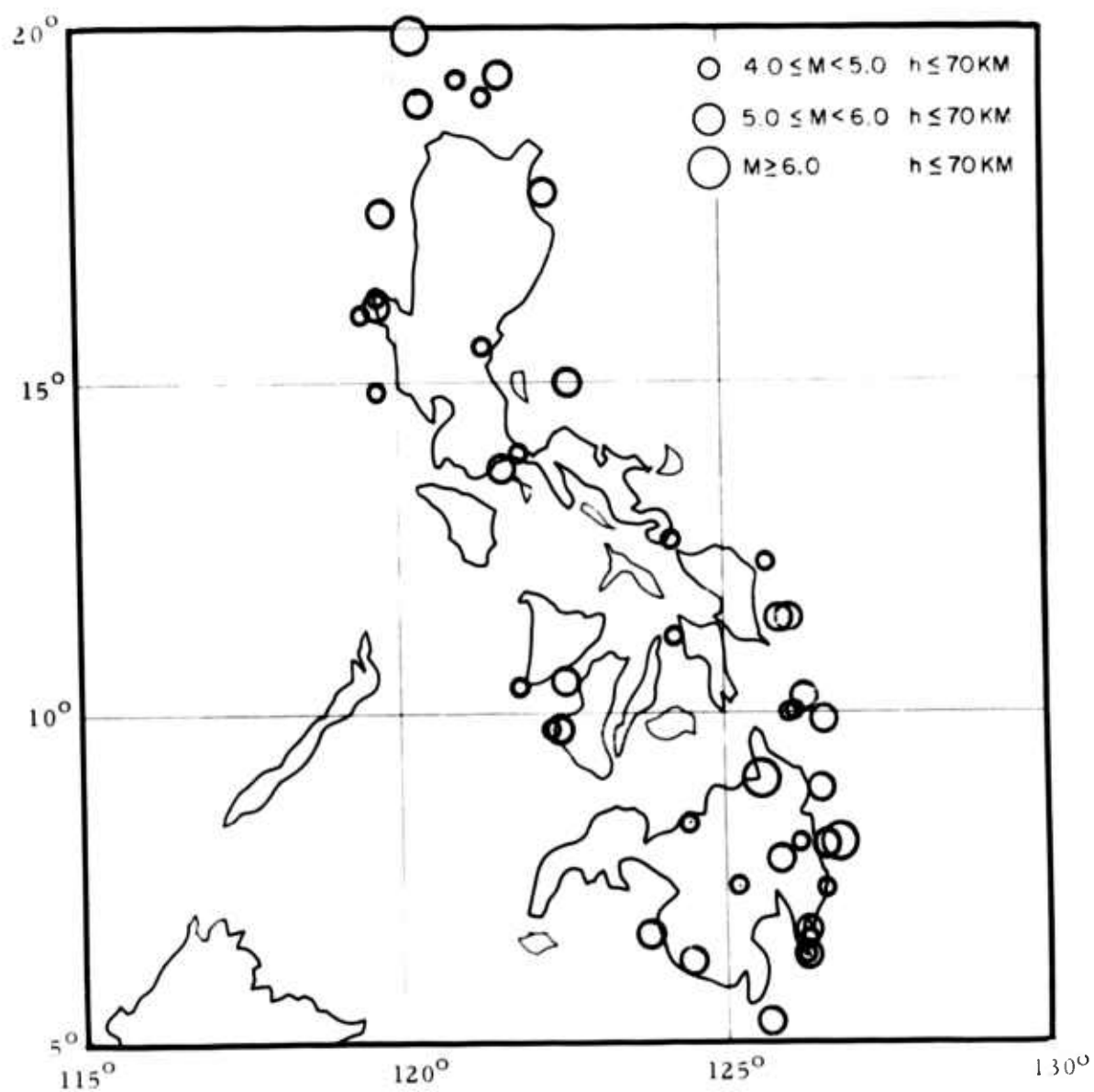


Figure 26. Earthquake Epicenters in the Philippine Islands  
During 1963 ( $h \leq 70 \text{ km}$ )

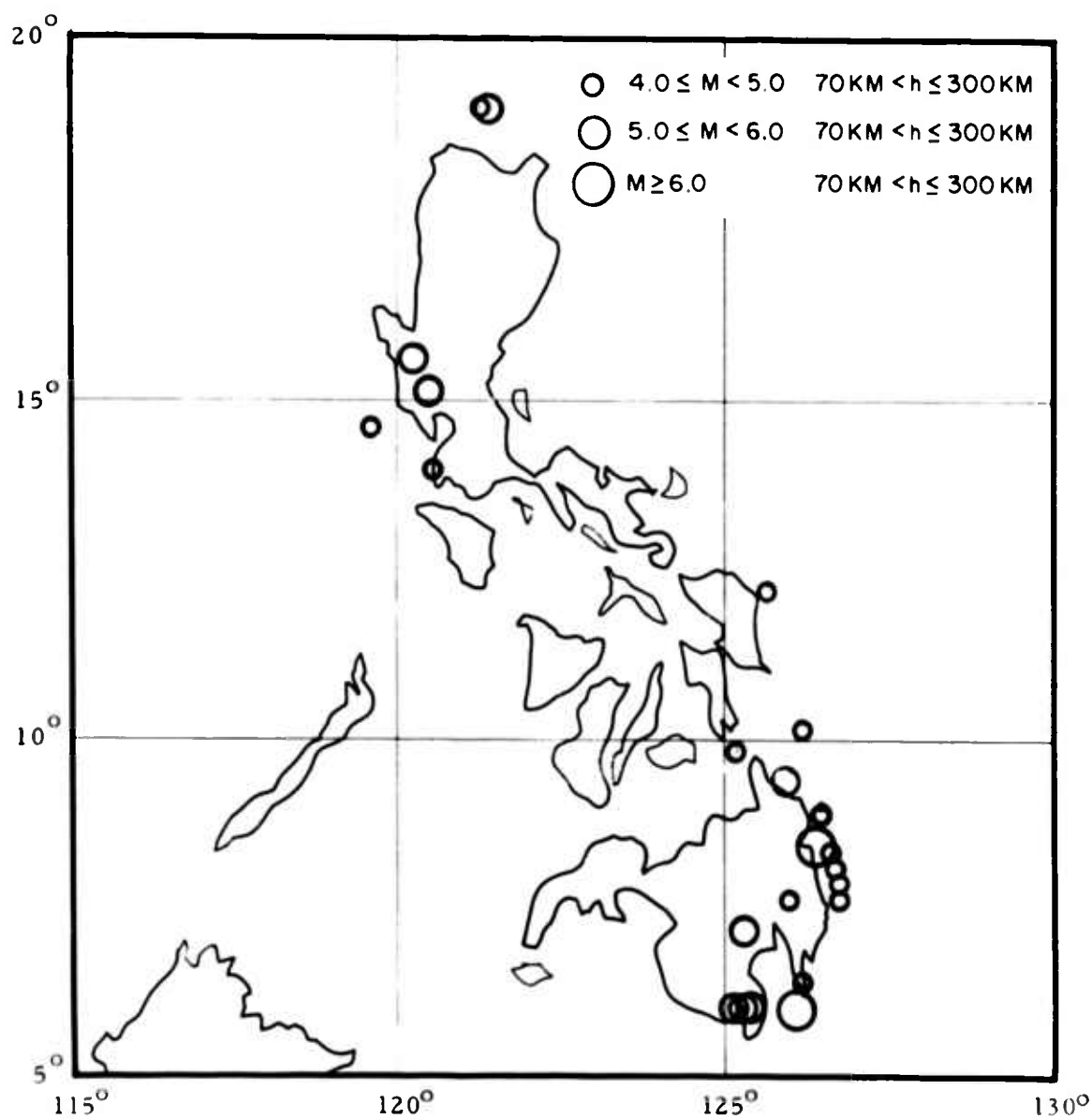


Figure 27. Earthquake Epicenters in the Philippine Islands  
During 1963 ( $h > 70 \text{ km}$ )

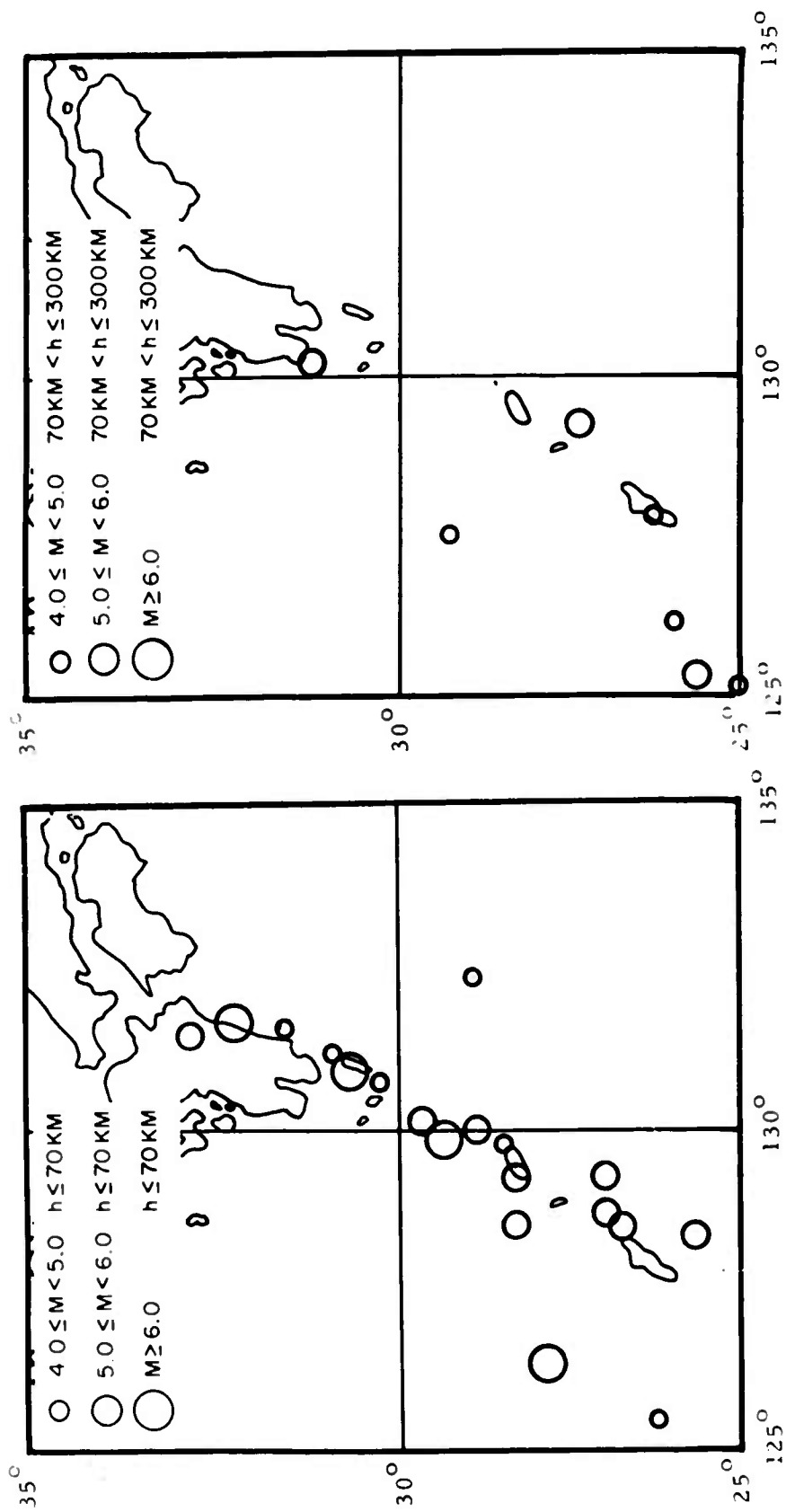


Figure 28. Earthquake Epicenters in the Ryukyu Islands During 1963 ( $h < 70$  km)

Figure 29. Earthquake Epicenters in the Ryukyu Islands During 1963 ( $h > 70$  km)

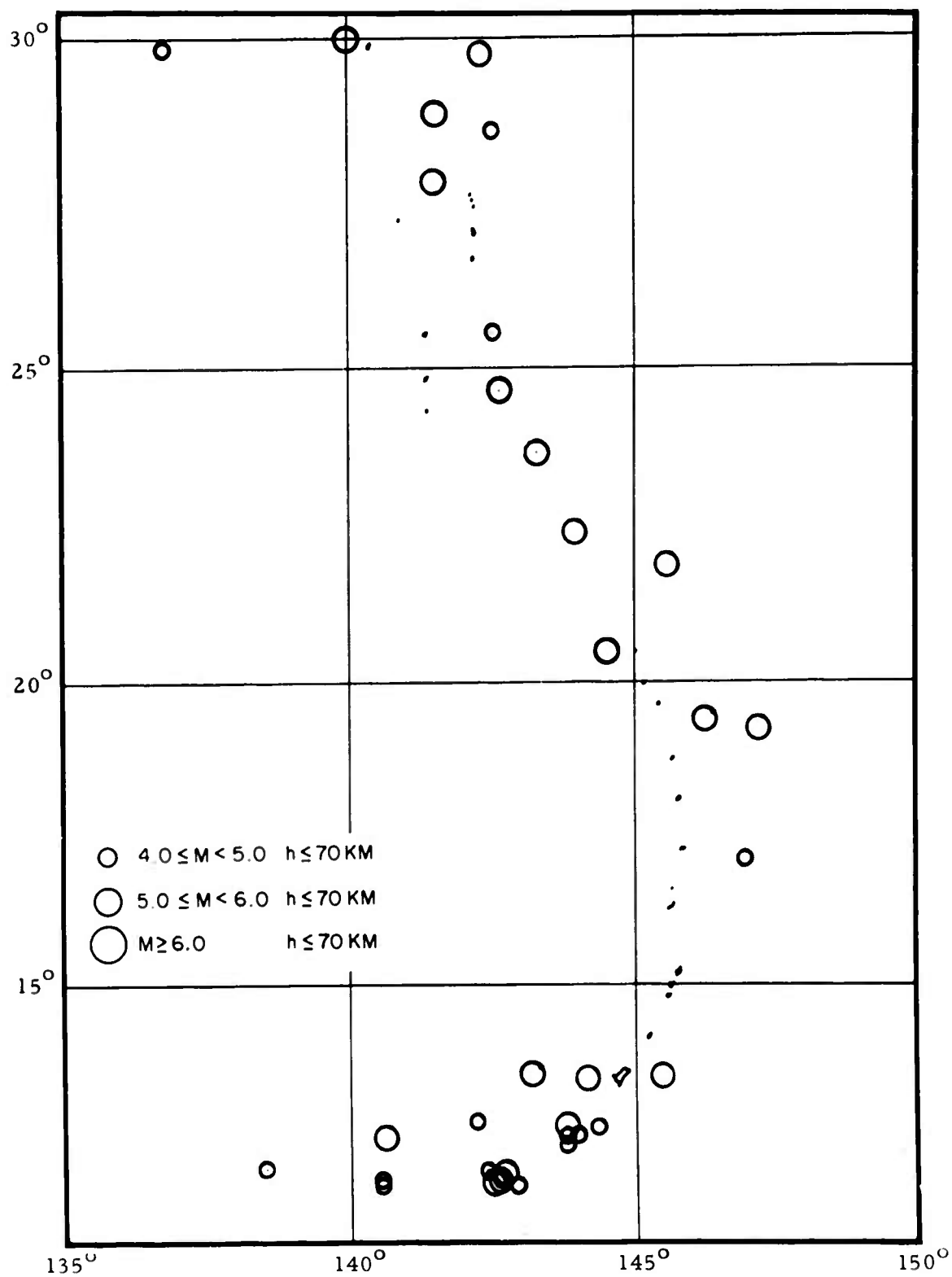


Figure 30. Earthquake Epicenters in the Mariana Islands  
During 1963 ( $h \leq 70 \text{ km}$ )

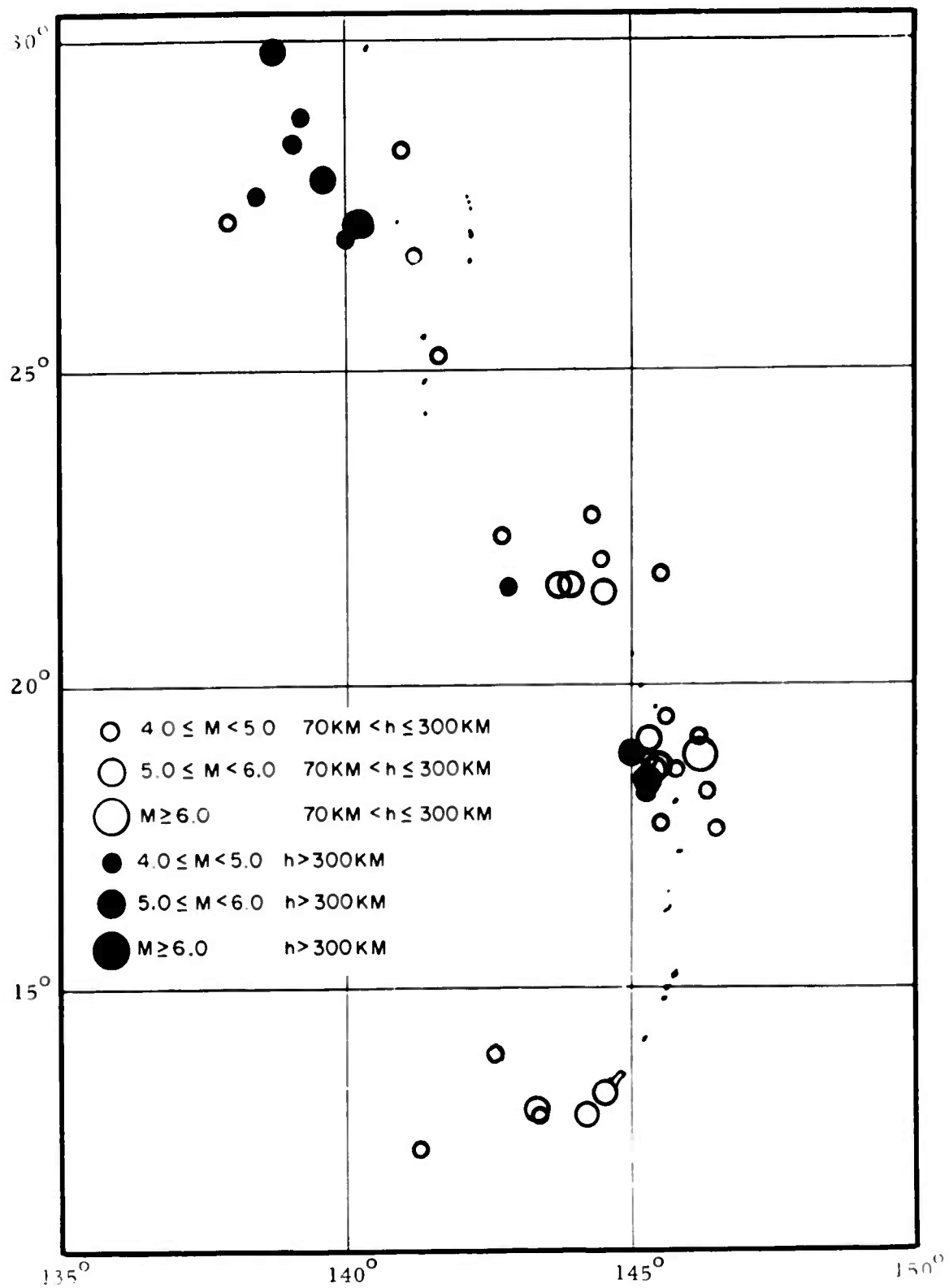


Figure 31. Earthquake Epicenters in the Mariana Islands  
During 1963 ( $h > 70$  km)

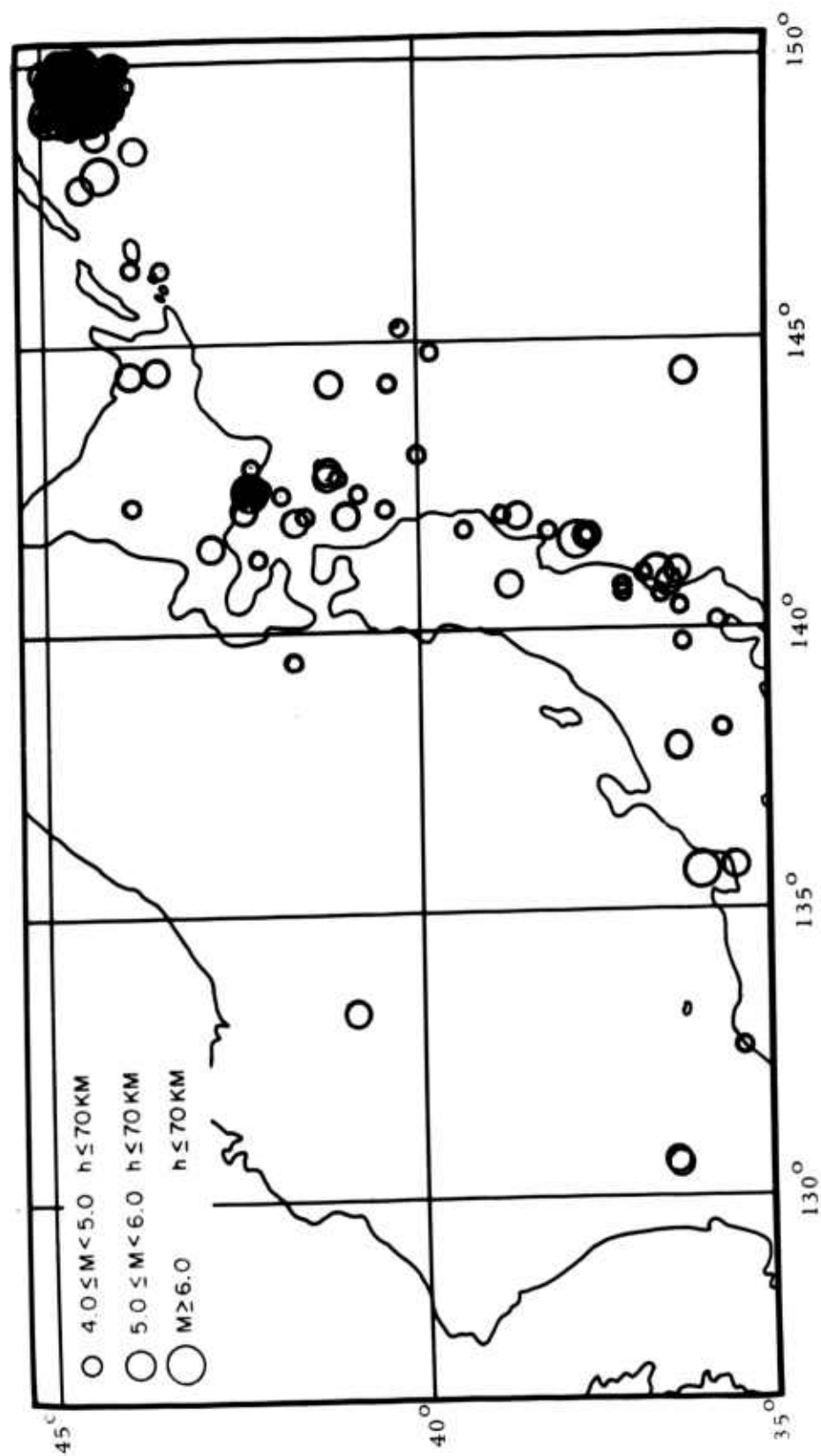


Figure 32. Earthquake Epicenters in Japan During 1963  
( $h \leq 70 \text{ km}$ )

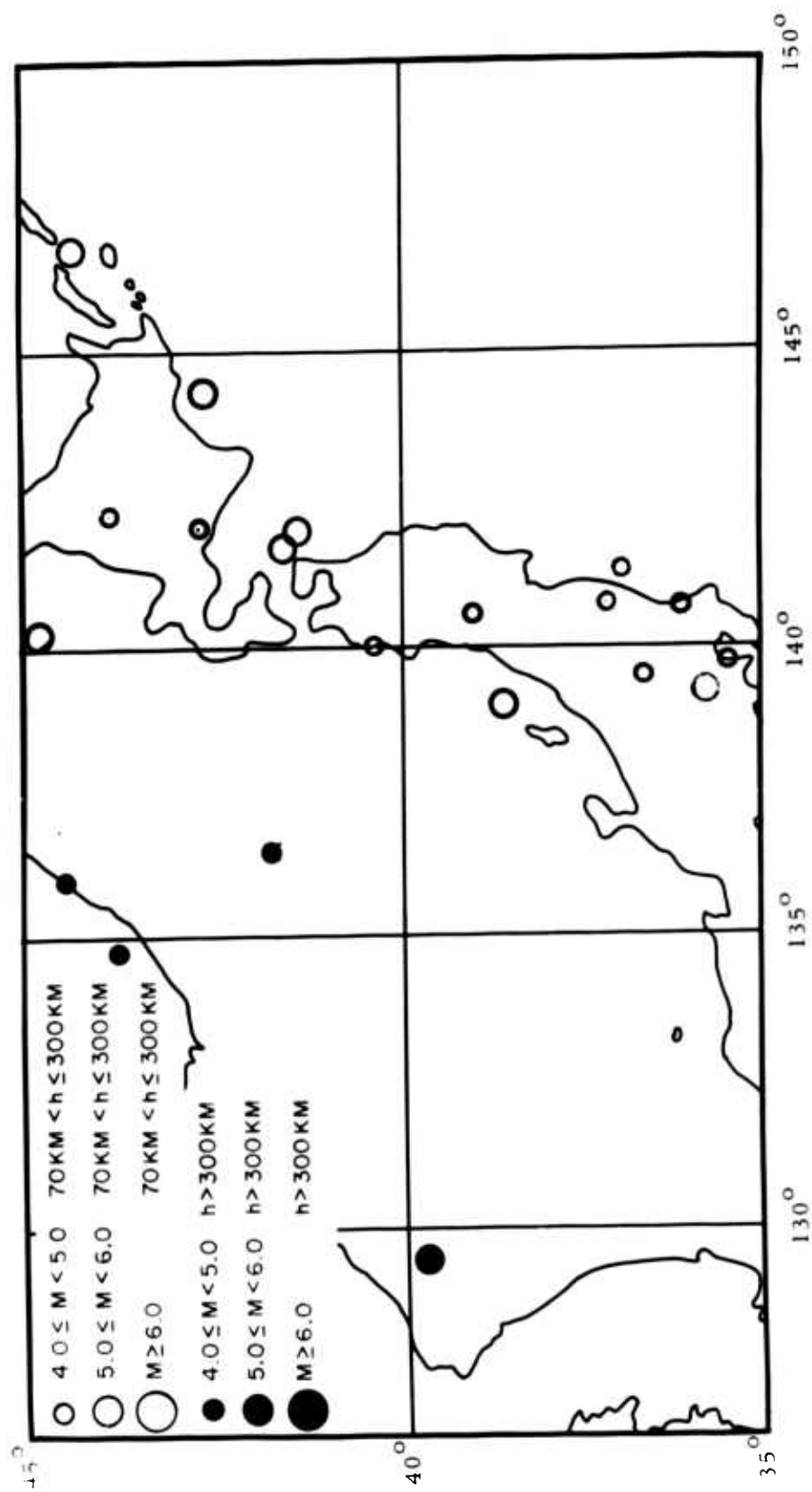


Figure 33. Earthquake Epicenters in Japan During 1963  
( $h > 70 \text{ km}$ )

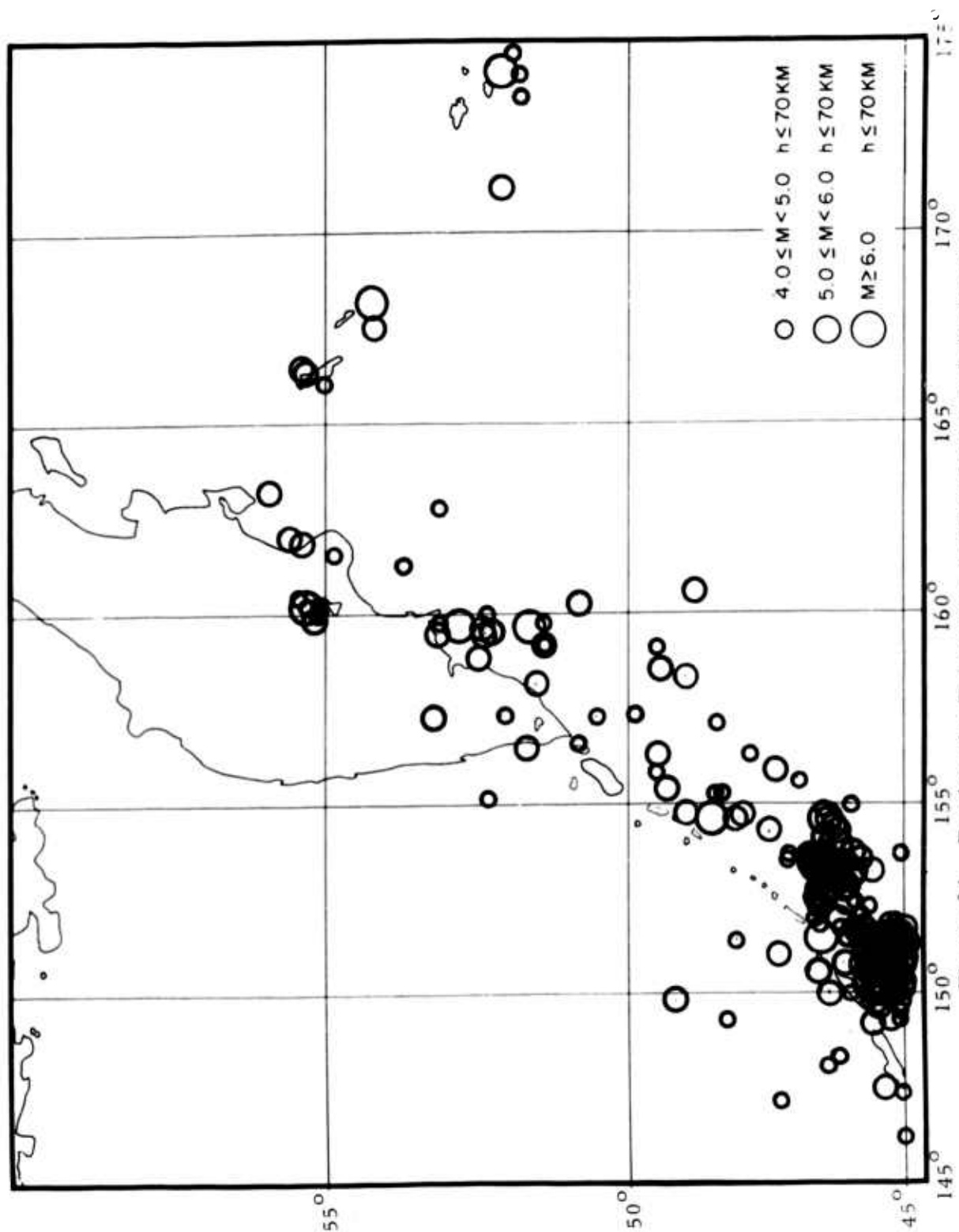


Figure 34. Earthquake Epicenters in Kamchatka and the Kurile Islands During 1963 ( $h < 70 \text{ km}$ )



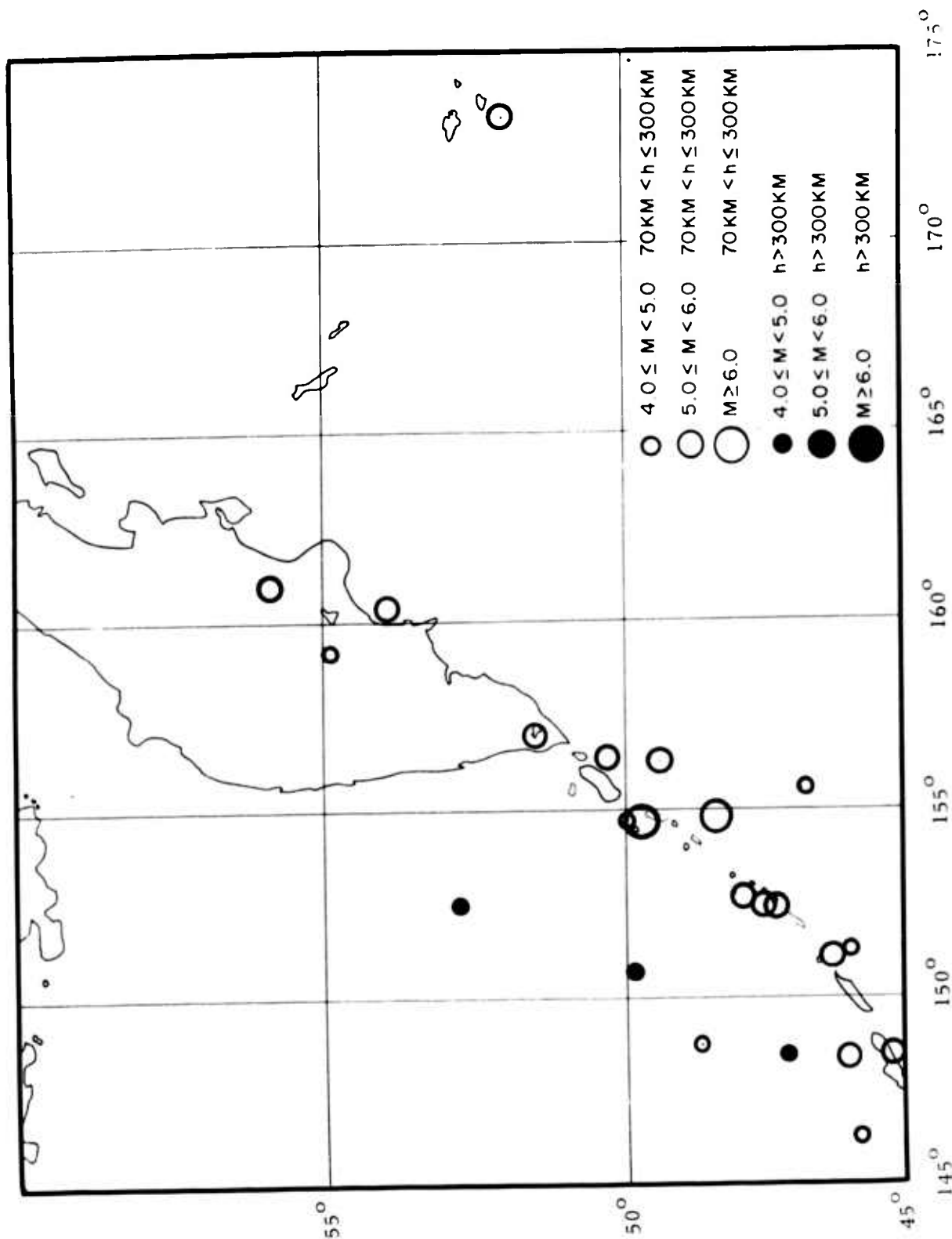


Figure 35. Earthquake Epicenters in Kamchatka and the Kurile Islands During 1963 ( $h > 70\text{ km}$ )

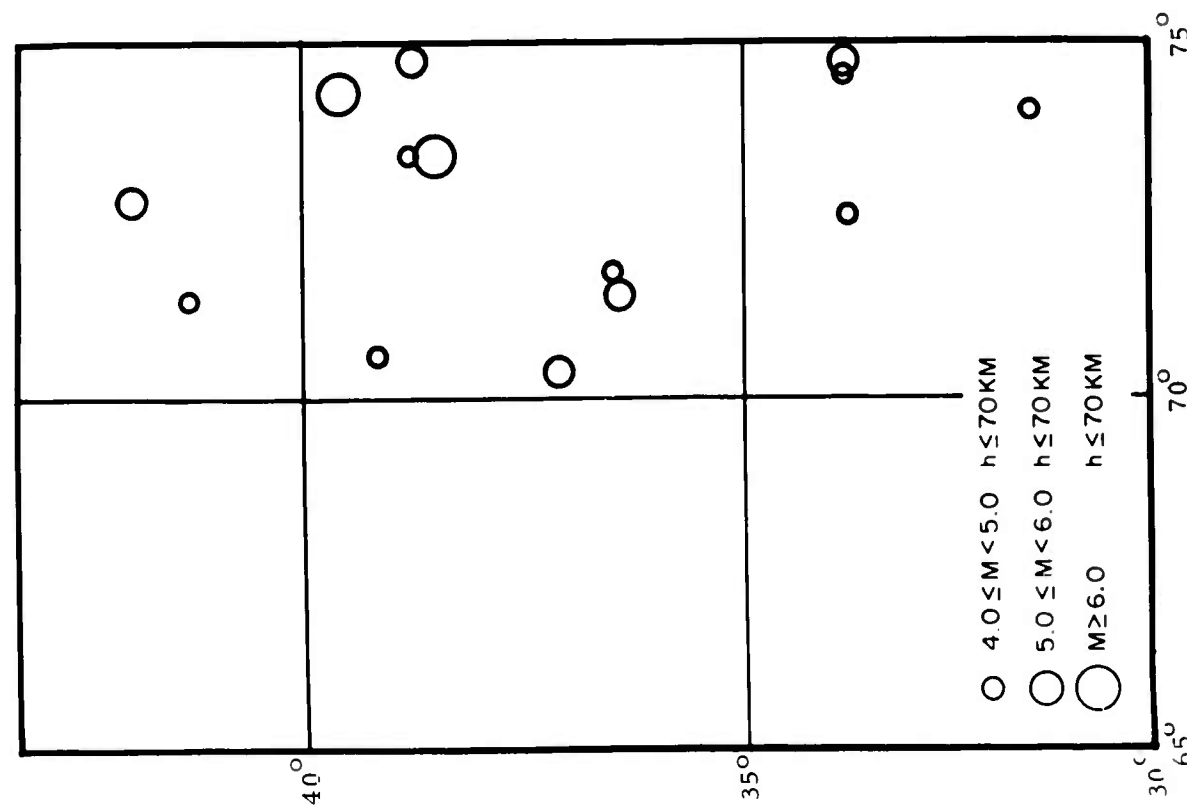


Figure 36. Earthquake Epicenters in the Hindu Kush During 1963 ( $h < 70$  km)

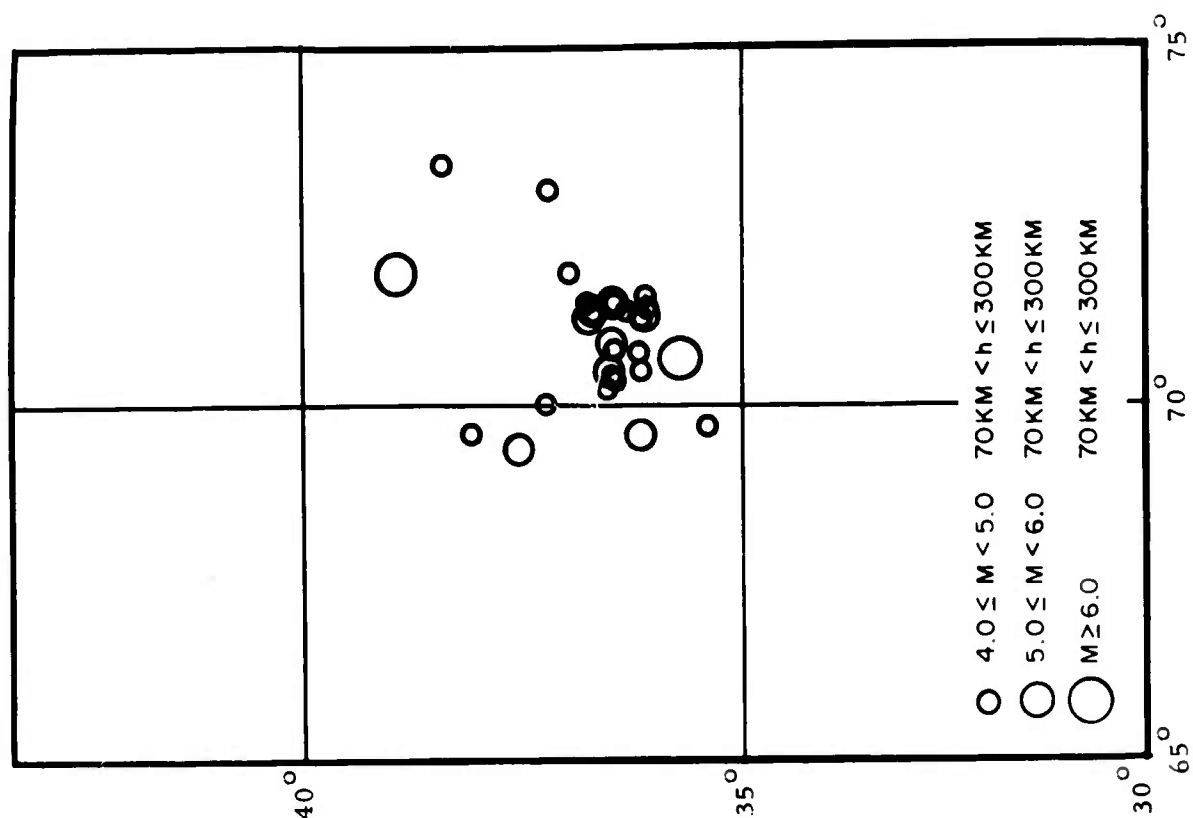


Figure 37. Earthquake Epicenters in the Hindu Kush During 1963 ( $h > 70$  km)

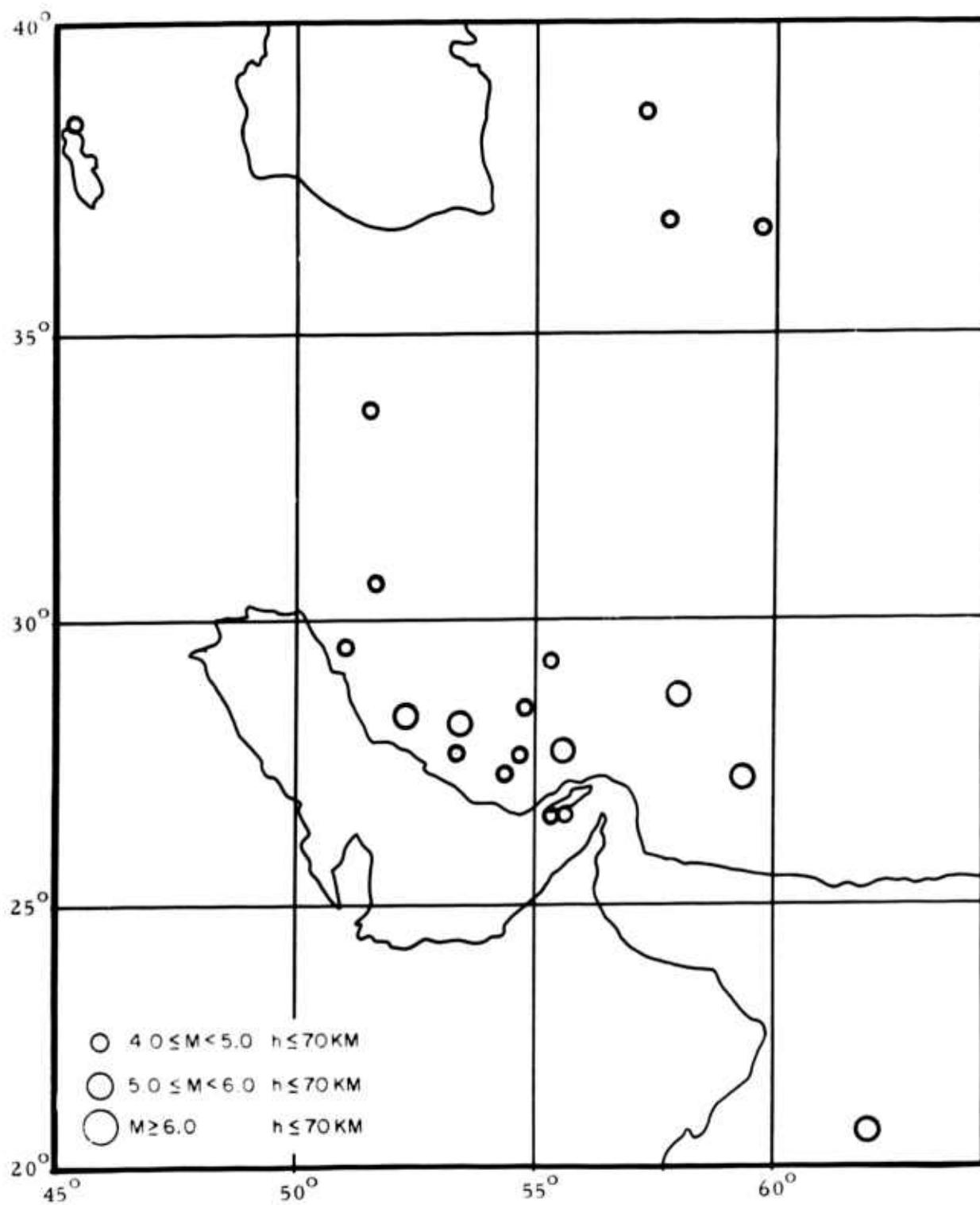


Figure 38. Earthquake Epicenters in Iran Area During 1963 ( $h < 70 \text{ km}$ )

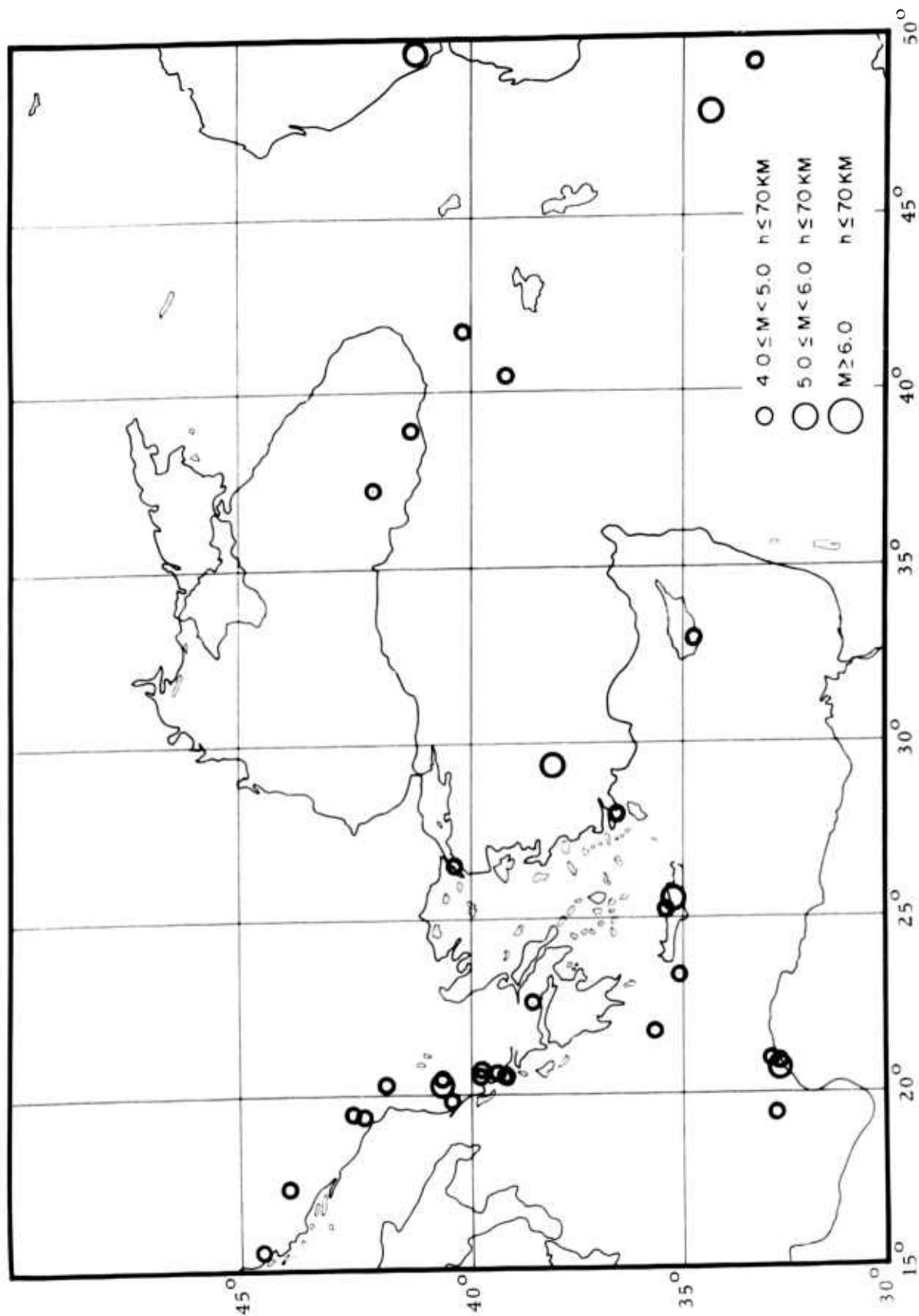


Figure 39. Earthquake Epicenters in the Eastern Mediterranean Area  
During 1963 ( $h < 70 \text{ km}$ )

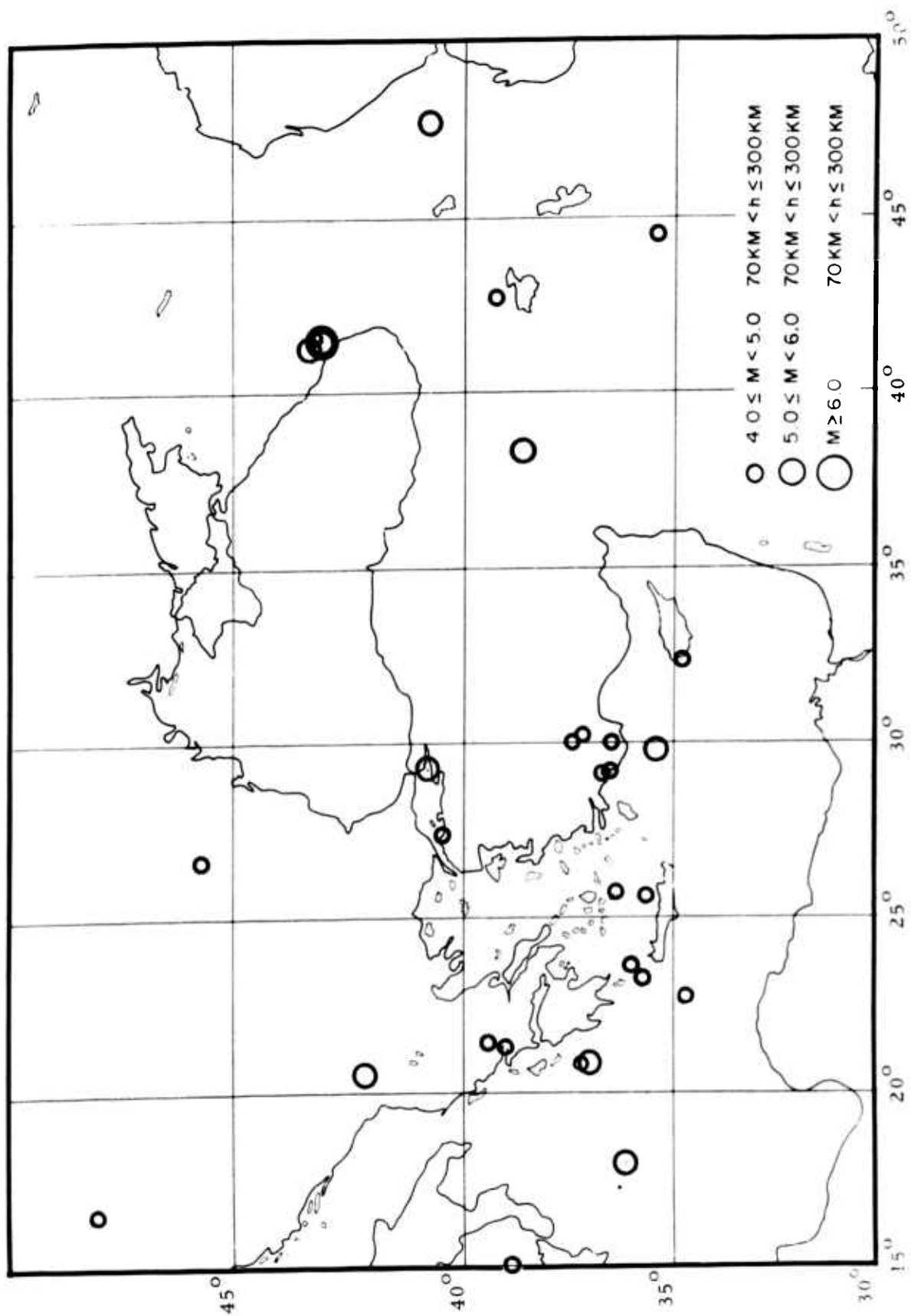


Figure 40. Earthquake Epicenters in the Eastern Mediterranean Area During 1963 ( $h > 70 \text{ km}$ )

## SECTION III

### CRITIQUE

#### A. GENERAL OBJECT

The study of worldwide seismic activity in 1963 was accomplished on a quantitative basis from data reduced from seismograms. Seismic activity above  $M_S \geq 5.0$  was documented and described both worldwide and by regions, and comparisons made with the 1960 study and with activity in other years as represented by the data of Gutenberg and Richter (1954).

Magnitudes on the unified scale,  $m_b$ , were calculated and statistics accumulated. Inconsistencies in these data, however, precluded any meaningful comparison of seismic activity on the two scales.

#### B. APPLICABILITY OF METHODS

The computational methods employed in magnitude determination are in agreement with the originators of the magnitude scales involved. Unified magnitudes were studiously separated from other magnitude determinations from the beginning of data reduction through the computer output. The methods of magnitude averaging used were adapted from Båth (1954), who has tested the method for several years in determination of average magnitudes from recordings of Swedish seismograph stations.

Seismicity was presented as numbers-per-unit-area in the lowest magnitude unit for which data were complete,  $5.0 \leq M \leq 6.0$ . This method permits comparisons to be made of seismicity in various regions whether larger shocks occur in the regions or many smaller shocks are recorded. If larger shocks occur they distort, for comparison purposes, the picture of seismicity calculated by the summed energy method. Presence of numerous small shock recordings, such as in the United States, can give a false picture of the relative seismicity of a region, when seismicity is defined as the total number of shocks.

The divisions into shallow, intermediate and deep earthquakes were taken from Gutenberg and Richter (1954), as were the regional boundaries. Use of these allows direct comparisons to be made with the data published in "Seismicity of the Earth," the acknowledged source book for worldwide seismicity data.

### C. ADEQUACY OF DATA

The stations from which data were received gave about as good azimuthal and areal coverage of the world as any combination of stations. Most of the stations possessing superior capabilities to those included in this study are located in the United States. Addition of these stations would add little to the azimuthal distribution of seismograph stations about seismic areas and their areal coverage would not extend far into the southern hemisphere where coverage is poorest.

Figures 41 and 42 show the combined theoretical perceptibilities of the stations used in the study. No figures are shown for  $m_b = 5.0$ , as earthquakes of this magnitude and greater should be recorded by at least five stations, no matter where the earthquakes are located. Figures 41a and 41b show those areas in the northern and southern hemispheres, respectively, covered by the network of stations used in this study. Only the South Atlantic, Antarctic, Indian Ocean and Southwestern Pacific earthquakes of  $m_b = 4.5$  in are not recorded by five or more stations, although one to four stations should record down to  $m_b = 4.5$  in practically all the above-mentioned areas. Coverage down to  $m_b = 4.0$  is sharply reduced from that at  $m_b = 4.5$ , as is shown in Figures 42a and 42b. Only in North America is coverage by five or more stations relatively complete. However, one to four stations should record  $m_b = 4.0$  earthquakes throughout the northern hemisphere. In the southern hemisphere, coverage is very poor.

Theoretical perceptibility is calculated by transposing the magnitude equation to read:

$$A_2 = m_b - \log \frac{A}{T} \quad (4)$$

where  $A_2$  is the depth-distance factor used in calculating  $m_b$  and  $\frac{A}{T}$  is the average maximum short-period noise amplitude divided by the period at each station in microns-per-second. Thus, the figures shown are an average situation which varies with the noise background.

Also, data were not available from all stations for every month of 1963. For example, some of the better standard stations were not installed until after the first of the year, others sent in records too late for copies to be obtained, and some records for certain days (especially in October during the Kurile earthquake swarm) were not sent in at all. Records from the Canadian stations for the last six months of the year were not analyzed, as they were received too late for analysis to be completed on schedule. For these reasons,

the coverage shown in Figures 41 and 42 is somewhat optimistic, although coverage above  $m_b = 5.0$  is probably accomplished throughout the year.

#### D. QUALITY OF DATA

The Worldwide Standard Station Network represents the best seismic instrumentation ever installed on such a wide scale. Since the instrumentation is standard, comparisons of data made from different stations are more valid than ever before. However, it is apparent from inspection of the seismograms that there is considerable variation in operational quality of stations. Poor optical adjustment is a commonly encountered problem which negates the advantage of the superior equipment installed. When this problem is coupled with a high-noise background, records are rendered practically useless. Overall, the quality of data furnished for this study was superior to any available in the past on a worldwide basis.

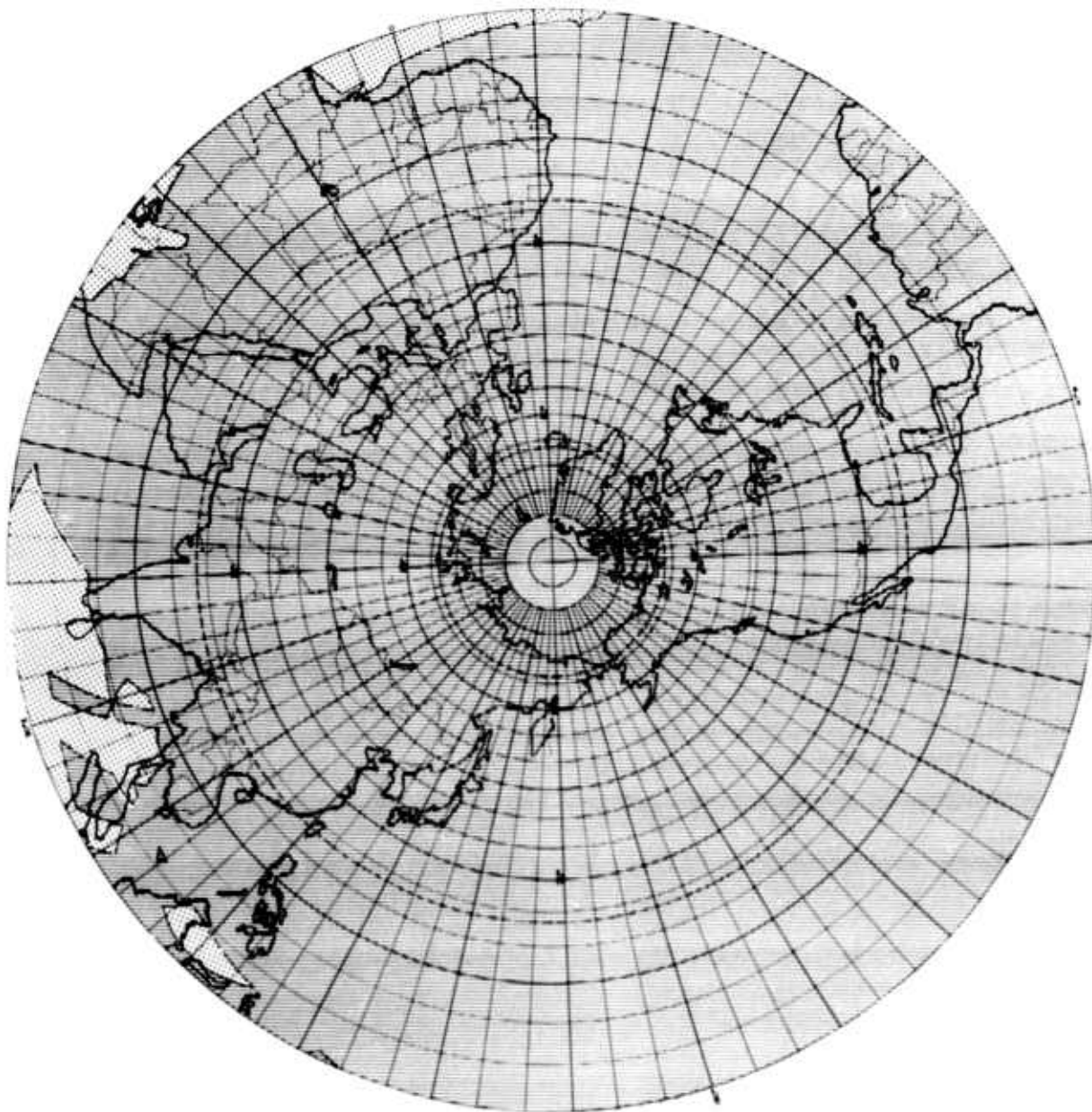
#### E. VALIDITY OF CONCLUSIONS

Results of the 1963 study show variations from that of 1960 as well as from Gutenberg and Richter's (1954) data. Such variations from year to year have been observed and are expected. No study has been made to statistically determine the size of seismicity data samples necessary to give "true" average values, either worldwide or regionally. The periodic occurrence of earthquake swarms in the circum-Pacific belt, such as that in Chile (1960), the Kuriles (1963) and Alaska (1964), result in somewhat different pictures of worldwide seismicity than is obtained by the averaging of data collected over several years.

Conclusions concerning the distribution of seismic activity and supposed connections between seismically active areas are dependent upon the quality of hypocenter determinations. Such determinations were beyond the scope of this study and the hypocenters listed in the Appendix were, for the most part, determined by the USC&GS. The quality of these determinations would be sufficient for all but detailed studies, such as precise correlation with tectonic features smaller than regional.

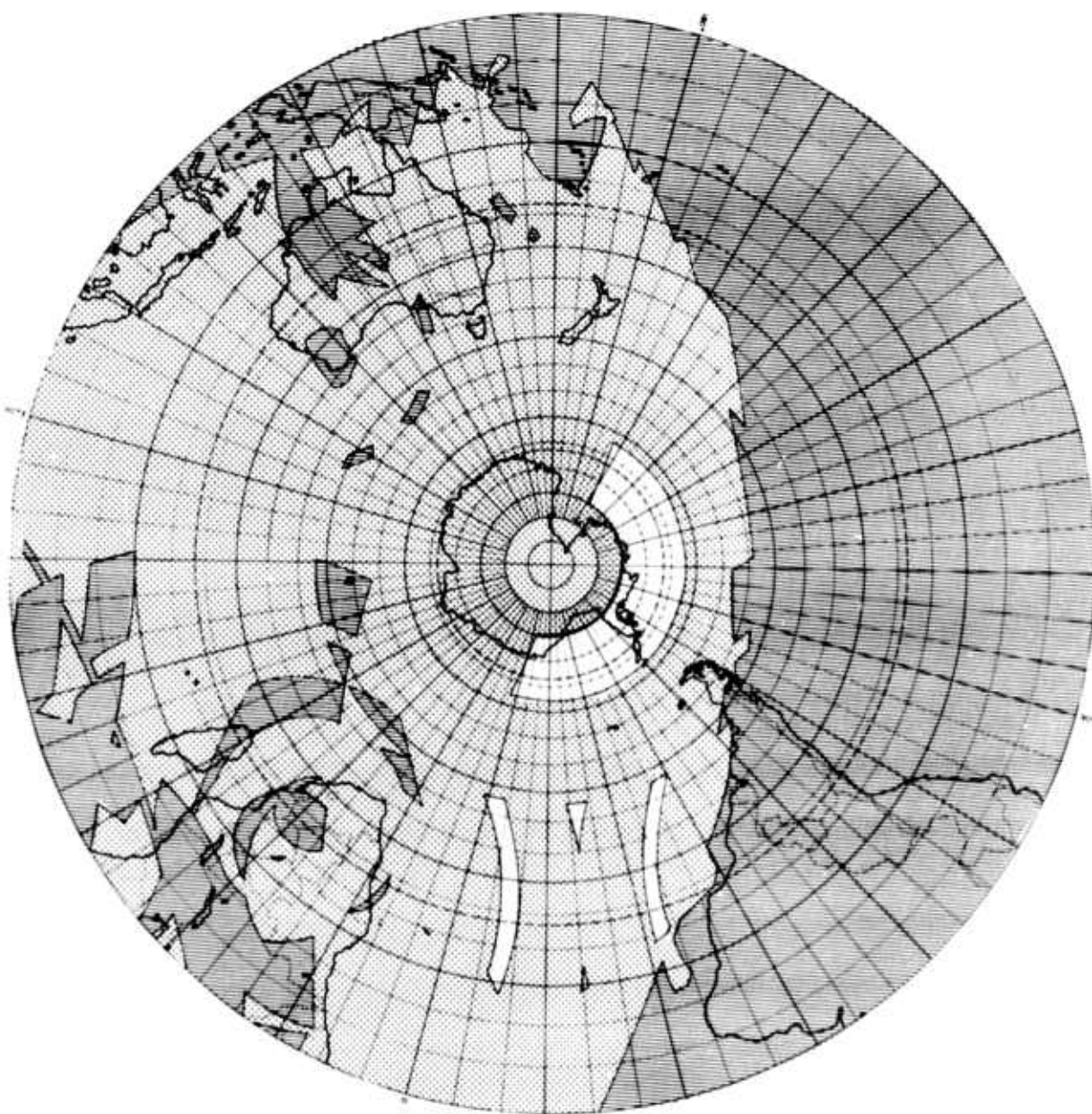
Although the problem of relating the  $m_b$  and  $M_S$  magnitude scales has not been resolved by this study, the tentative conclusions concerning the distance dependence of the relationship are clearly indicated by the data. Results based upon teleseismic recordings are compatible with other studies. Therefore, work in this area should be considered as only pointing the direction for more detailed study in the future.





Key:  Recorded by 5 or more stations.  
 Recorded by at least one but less than 5 stations.  
 Not Recorded.

Figure 41a. Areal Coverage by Stations Used in 1963 Seismicity Study,  
 $m_b = 4.5$  (Northern Hemisphere)



Key:




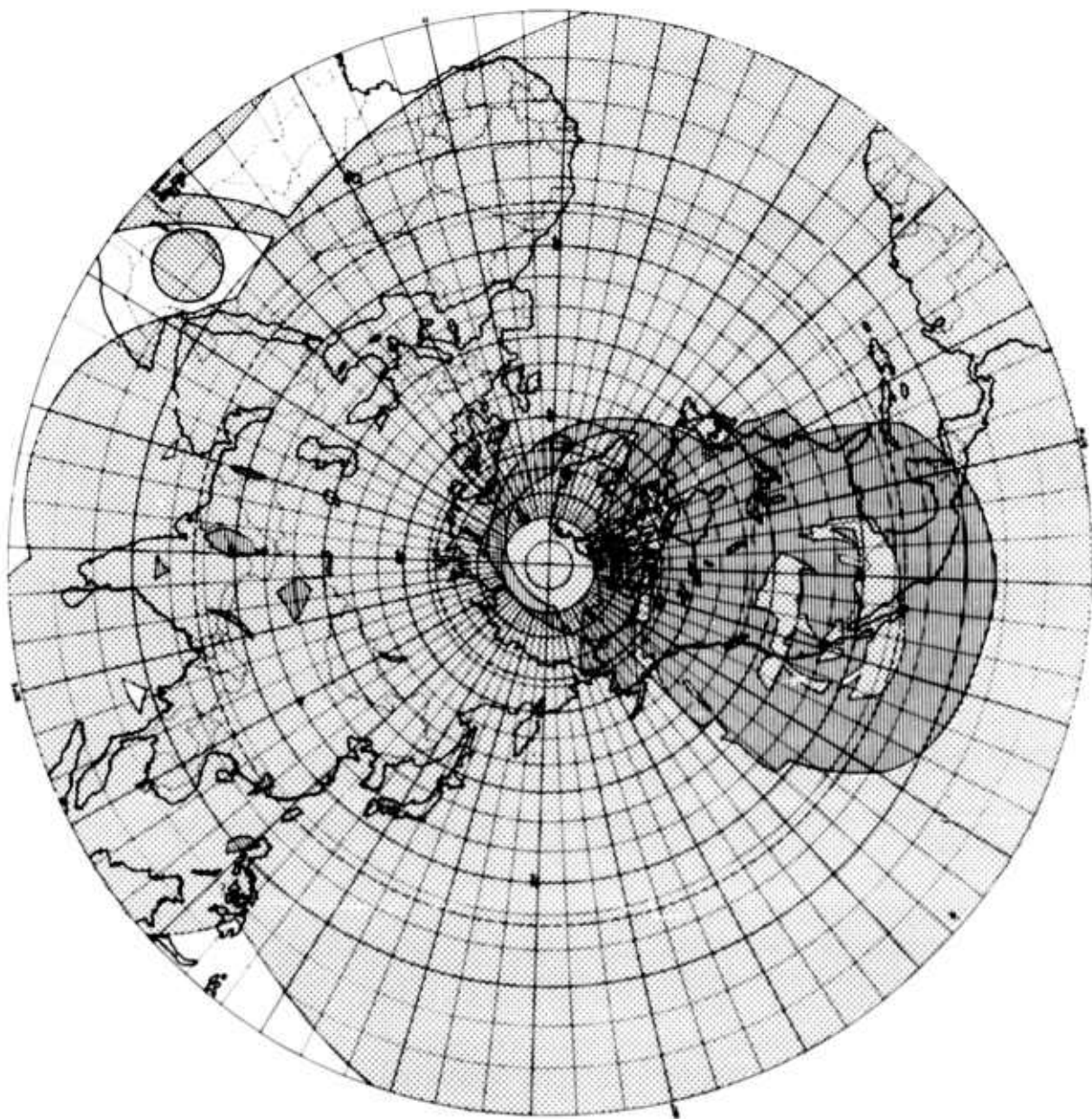
	Recorded by 5 or more stations.
	Recorded by at least one but less than 5 stations.
	Not Recorded.

Figure 41b. Areal Coverage by Stations Used in 1963 Seismicity Study,  
 $m_b = 4.5$  (Southern Hemisphere)



Key:




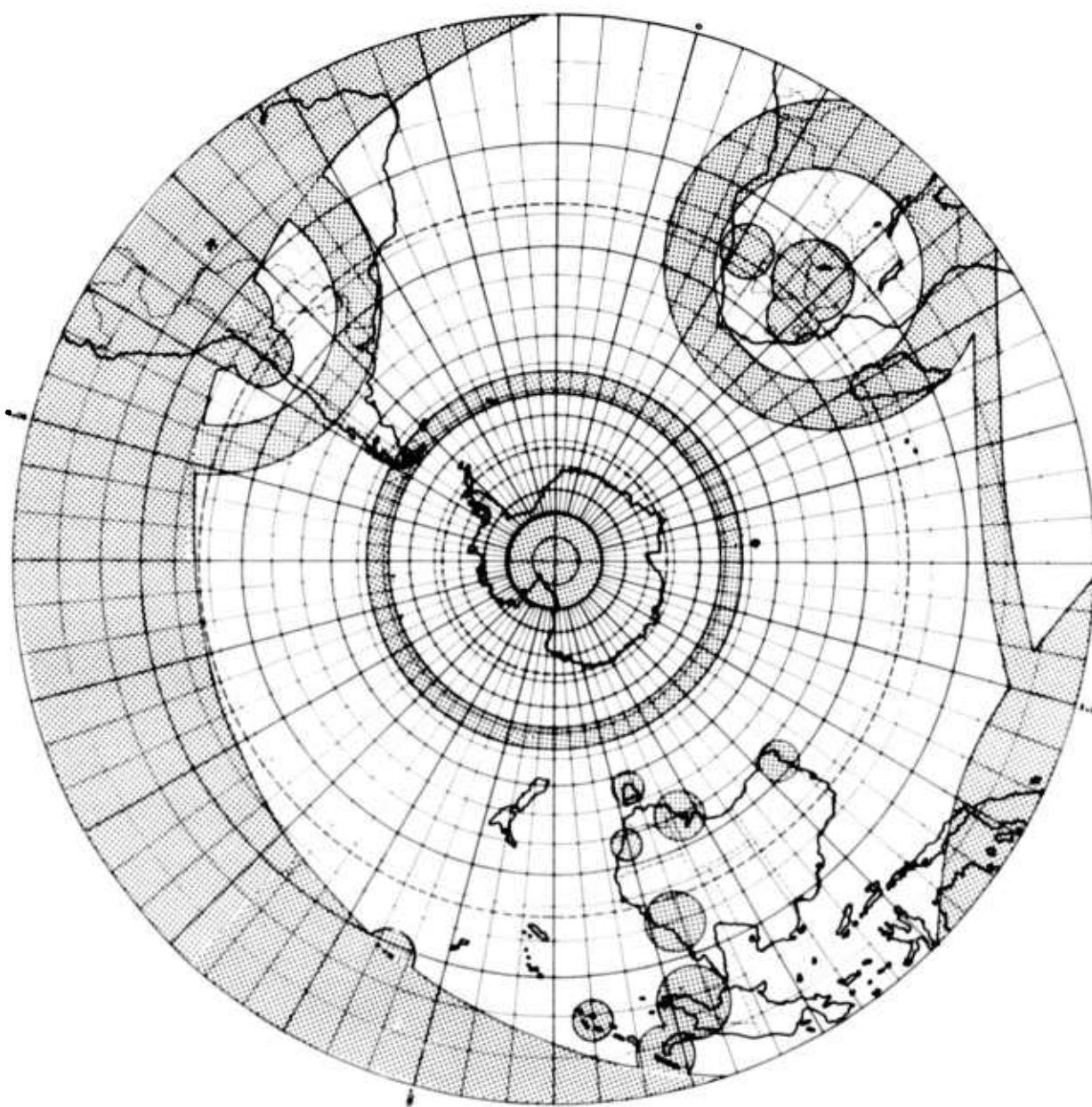
	Recorded by 5 or more stations.
	Recorded by at least one but less than 5 stations.
	Not Recorded.

Figure 42a. Areal Coverage by Stations Used in 1963 Seismicity Study for Normal Focus Earthquakes,  $m_b = 4.0$  (Northern Hemisphere)



Key:




	Recorded by 5 or more stations.
	Recorded by at least one but less than 5 stations.
	Not Recorded.

Figure 42b. Areal Coverage by Stations Used in 1963 Seismicity Study for Normal Focus Earthquakes,  $m_b = 4.0$  (Southern Hemisphere)

## APPENDIX A

### EVENTS LIST

The event list represents only information concerning those primary events ( $M \geq 3$ ) which were recorded, located and/or assigned a magnitude during 1963. In addition to the 4797 events listed, other events were evaluated, including 6066 locals ( $M < 3.0$ ) that were recorded and 746 teleseisms for which epicenters could not be obtained.

Epicenters located by individual stations and not reported by USC&GS were added to give a more complete list of events. Many station bulletins were scanned and a significant number of events was added after checking bulletins from Trieste, Italy, Strasbourg, France, Uppsala, Sweden, and Trinidad, B. W. I.

### SYMBOLS AND ABBREVIATIONS

MAG	Average of published $M_S$ values
MCGS	$m_b$ reported by USC&GS on PDE cards
MTOT	Value of $M_S$ computed in study
MB	Value of $m_b$ computed in study
Local PMG $4.8^\circ$	Small event recorded at a certain station within a certain $\Delta^\circ$ .

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	1	2	3	49			33			4.33	5.20	LOCAL PMG 7.7	16
1	1	4	5	28	6.9N	73.1W	151			5.90	5.05	COLOMBIA	7
1	1	4	45	3			33			4.64	5.40	LOCAL PMG 8.1	16
1	1	6	26	45			33			4.21	4.80	LOCAL PMG 13.9	16
1	1	12	17	39	6.8S	155.9E	165			5.64	5.43	SOLOMON IS	15
1	1	12	50	22	7.4N	74.1W	33					COLOMBIA	7
1	1	13	48	6	20.8N	144.6E	43			5.50	4.85	MARIANA IS	18
1	1	14	31	47			33			4.39	5.30	LOCAL QUE 6.4	47
1	1	14	43	6	3.4N	122.9E	59			6.30	5.70	CELEBES SEA	23
1	1	15	11	47			33			4.95	5.60	LOCAL PMG 8.2	16
1	1	15	30	56			33			4.60	5.40	LOCAL PMG 7.9	16
1	1	16	27	38	20.0S	175.4W	130			5.62	5.16	TONGA IS	12
1	1	17	49	31	6.9S	155.5E	82			4.29	5.20	SOLOMON IS	15
1	1	19	35	55	40.2S	81.3E	33			5.81	5.50	INDIAN OCEAN	33
1	1	23	39	5	56.6N	157.7W	50	6.6		6.33	5.82	ALASKA PENINSULA	1
1	2	53	49		17.5N	82.7W	33			4.23	4.21	SWAN IS	7
1	2	1	15	51	4.6S	105.9W	33			5.08	4.75	S OF GALAPAGOS IS	44
1	2	2	20	41			33			4.76	5.50	LOCAL PMG 8.4	16
1	2	3	23	30	5.8S	150.0E	33			4.96	5.40	NEW BRITAIN	16
1	2	3	32	42			33			3.29	4.60	LOCAL PMG 4.8	16
1	2	4	43	9			33			3.82	4.20	LOCAL PMG 3.8	16
1	2	5	35	40	17.4S	178.6W	540					FIJI IS REGION	12
1	2	5	44	36			33			3.34	4.25	N CHILE	8
1	2	5	47	6	20.8S	174.1W	33	5.3		5.87	5.60	TONGA IS	12
1	2	8	39	9			33			3.04	4.40	LOCAL ARE 6.6	8
1	2	9	24	34	4.6S	144.8E	51			5.18	4.93	NE NEW GUINEA	16
1	2	9	53	37	10.0N	84.8W	151			4.12	4.44	W COSTA RICA COAST	6
1	2	11	57	21	51.4N	178.4W	29					ANDREANOF IS	1
1	2	14	56	5	4.1S	135.2E	33			5.99	5.51	SW NEW GUINEA COAST	16
1	2	15	55	48	52.9S	118.2W	33			5.88	5.76	S PACIFIC OCEAN	43
1	2	17	59	39	4.3S	135.2E	33			5.78	5.18	S NEW GUINEA COAST	16
1	2	18	30	52	10.7S	165.0E	39			6.02	5.60	SANTA CRUZ IS	15
1	2	20	31	37			33			4.74	5.50	LOCAL PMG 8.2	16
1	2	20	54	15			33			4.40	5.30	LOCAL NNA 8.5	8
1	3	3	5	3	29.7N	130.1E	33	5.9		5.73	5.06	RYUKYU IS	20
1	3	3	49	32			33			4.82	5.50	LOCAL PMG 8.4	16
1	3	5	11	24			33			3.15	4.50	LOCAL PMG 3.7	16
1	3	6	35	28	12.9S	166.0E	74			3.68	4.00	SANTA CRUZ IS	14
1	3	6	58	13			33			3.46	4.70	LOCAL PMG 6.2	16
1	3	7	13	29	52.6N	167.8W	33					FOX IS	1
1	3	7	36	15	26.2S	64.9W	33			5.44	4.87	TUCUMAN ARGENTINA	8
1	3	9	39	46	5.3S	151.5E	75	5.2		5.93	5.28	NEW BRITAIN IS	15
1	3	13	56	34	6.9S	155.2E	91			5.34	5.04	SOLOMON IS	15
1	3	17	25	34	22.0S	169.6E	33					LOYALTY IS	14
1	3	18	42	14	13.0N	145.4E	33			5.50		MARIANA IS	18
1	3	18	59	12			33			4.45	5.30	LOCAL ATU 5.8	30
1	3	19	12	50	5.9S	155.0E	99			5.11	5.00	SOLOMON IS	15
1	3	21	38	13			33			3.00	3.60	LOCAL MAN 1.2	22
1	3	22	30	59			33			4.70	5.50	LOCAL PMG 8.2	16
1	4	23	55		1.2N	27.7W	33			5.69	5.28	S OF CAPE VERDE IS	32
1	4	2	18	17			33			4.70	5.50	LOCAL PMG 8.3	16
1	4	3	45	45			33			3.08	3.90	LOCAL ARE 4.8	8
1	4	5	32	51	4.7S	153.2E	162			4.60	5.36	NEW IRELAND	15
1	4	5	42	35	29.7N	142.2E	33			5.11	4.70	BONIN IS	18
1	4	6	43	42	32.6S	178.6W	44			5.31	4.98	KERMADEC IS	12
1	4	6	50	6			33			4.69	5.40	LOCAL PMG 8.4	16
1	4	8	47	25	46.3N	154.3E	33			5.11	4.70	KURILE IS	19
1	4	8	50	13	18.8S	169.5E	243			5.18	5.20	NEW HEBRIDES IS	14
1	4	11	21	25			33			4.22	5.20	LOCAL PMG 8.2	16
1	4	12	15	28			33			3.97	4.30	LOCAL NNA 4.0	8

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MO	DA	HR	MIN	SEC	LAT	LONG	DEP	MAG	MC65	MTOT	MB	LOCATION	REG
1	4	1	16	38	4.7S	154.0E	69		5.92	5.71		SOLOMON IS	15
1	4	15	46	38			33		3.33	4.20		LOCAL MAN 1.2	22
1	4	16	18	27			33		4.82	5.50		LOCAL PMG 8.1	16
1	4	16	50	18			33		4.63	5.40		LOCAL PMG 8.2	16
1	4	20		23			33		3.20	4.50		LOCAL PMG 1.2	16
1	4	21	17	10	6.7N	73.1W	160		4.42	5.00		COLUMBIA	7
1	4	22	50	20			33		3.30	4.60		LOCAL PMG 6.9	16
1	4	23	47	21			33		4.16	5.10		LOCAL PMG 8.0	16
1	4	23	50	7	46.5N	153.7E	33		5.48	5.30		KURILE IS	19
1	4		27	11	3.2N	127.0E	33		5.83	5.33		HALMAHERA	23
1	4	1	54	48			33		4.92	5.60		LOCAL PMG 7.9	16
1	4	2	13	23			33		4.67	5.00		LOCAL PMG 8.1	16
1	4	3	22	13			33		4.09	5.10		LOCAL PMG 7.5	16
1	4	3	33	34	3.4N	125.3E	126		5.60	5.20		SANGHE IS	23
1	4	4	30	54			33		3.69	4.80		LOCAL ATU 4.6	30
1	4	4	38	3			33		4.88	5.60		LOCAL PMG 8.2	16
1	4	6	52	27	65.2N	148.0W	33		4.70	4.35		CENTRAL ALASKA	42
1	4	7	5	22	46.8N	153.7E	33		5.36	4.87		KURILE IS	19
1	4	11	5	10	7.3S	73.7W	180		3.90	4.45		PERU-BRAZIL BORDER	8
1	4	13	4	48	17.8S	167.9E	33		5.55	5.66		NEW HEBRIDES	14
1	4	14	16	43	10.0S	124.0E	33		5.80	5.20		TIMOR	24
1	4	15	2	5			33		3.77	4.80		LOCAL IST 4.1	30
1	4	15	5		43.0N	152.6E	33		4.83	4.50		KURILE IS	19
1	4	15	41	50			33		4.85	5.50		LOCAL PMG 8.1	16
1	4	17	43	35	7.0S	72.1W	544		4.89	4.89		N BRAZIL	8
1	4	18		40			33		4.32	5.20		LOCAL GOL 9.1	47
1	4	18	21	5			33		3.34	4.40		LOCAL ANT 2.1	8
1	4	18	37	50			33		3.11	3.90		LOCAL ANT 1.6	8
1	4	21	6	11			33		4.26	5.20		LOCAL PMG 8.0	16
1	4	21	27	7	1.0N	126.1W	33		4.43	4.20		OFF CALIF COAST	3
1	4		55	53	5.7S	147.3E	141		4.26	4.73		NEW GUINEA	16
1	4		27	59	17.0S	169.5E	259		4.50	4.50		NEW HEBRIDES IS	14
1	4		18	57	0.0N	125.3E	143		5.57	5.46		MINDANAO PI	22
1	4	4	4	14	23.6N	108.6W	33		3.98	4.20		CALIFORNIA GULF	4
1	4	6	17	28	1.8S	80.7W	51		5.56	4.95		NEAR ECUADOR COAST	8
1	4	7	29	54	46.8N	153.6E	33		5.20	4.77		KURILE IS	19
1	4	8	6	31	41.7N	147.4E	57					S HOKKAIDO	19
1	4		24	48	4.9S	153.8E	131		5.47	5.35		SOLOMON IS	15
1	4	10	8	51			33		4.14	5.10		LOCAL PMG 6.9	16
1	4	10	35	27			33		4.83	5.50		LOCAL PMG 7.0	16
1	4	17	25	53	62.7N	151.1W	116		5.36	4.78		CENTRAL ALASKA	1
1	4	18	7	48	44.7N	132.0W	33		3.38	4.44		MONTANA-IDAHO BORDER	34
1	4	15	44	13			33		4.86	5.60		LOCAL PMG 8.6	16
1	4	19	46	58	8.7S	123.8E	33		5.80	5.38		FLORES	24
1	4	21	21	56	47.4N	155.9E	33		5.61	5.07		KURILE IS	19
1	4	21	42	53			33		3.52	3.80		LOCAL PMG 4.0	16
1	4	22	8	59	33.9N	28.0E	33		3.76	4.90		SE OF CRETE	30
1	4	22	33	27	15.2N	60.8W	72		4.11	5.55		LEEWARD IS	7
1	7	1	25	47			33		4.47	5.30		LOCAL PMG 8.2	16
1	7	2	48	55			33		4.22	5.20		LOCAL PMG 8.2	16
1	7	6	24	49	6.4S	154.7E	80		5.78	5.22		SOLOMON IS	15
1	7	7		57	33.8N	137.5E	344					S HONSHU	20
1	7		27	4					3.05	4.40		LOCAL ARE 2.4	8
1	7	8	17	23			33		3.69	4.80		LOCAL PMG 7.9	16
1	7	11	48	22	.6N	126.7E	42	5.6	5.90	5.48		HALMAHERA	23
1	7	16	1	28			33		4.53	5.20		LOCAL PMG 8.3	16
1	7	18	28	41	15.9S	173.0W	33		4.41	3.60		SAMOA IS	12
1	7	19	19	34	17.5S	167.7E	19		5.45	6.00		NEW HEBRIDES IS	14
1	8	1	31	47	39.9N	77.9E	33		4.82	4.60		SINKIANG CHINA	27
1	8	1	44	9			33		4.35	5.20		LOCAL PMG 8.2	16



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	8	6	26	7			33			4.03	4.50	LOCAL QUE 7.5	47
1	8	6	40	58			33			4.44	4.70	LOCAL QUE 8.1	47
1	8	7	25	15			33			3.89	4.90	LOCAL QUE 7.5	47
1	8	9	20	56			33			3.25	3.60	LOCAL ARE 4.5	8
1	8	15	46	45	31.2N	130.2E	177			5.28	4.88	S OF KYUSHU JAPAN	20
1	8	15	52	43			33			3.68	4.80	LOCAL STU 1.5	36
1	8	16	16	58	45.5N	14.5E	33			3.72	4.80	YUGOSLAVIA	36
1	8	19	50	5	17.0S	171.8W	33			5.17	4.50	SAMOA IS	12
1	8	20	35	9			33			3.98	4.70	LOCAL ANT 2.9	8
1	8	21	45	26			33			4.28	5.20	LOCAL ATU 5.7	30
1	9	2	2	38	28.9S	177.4W	71			5.70	4.87	KERMADEC IS	12
1	9	3	13	26	18.6N	145.4E	192			5.44	5.00	MARIANA IS	18
1	9	6	53	28	10.3S	124.0E	33			5.14	4.50	TIMOR REGION	23
1	9	10	25	21			33			4.17	5.10	LOCAL QUE 7.4	47
1	9	11	43	38	20.0S	168.7E	33			4.32	4.55	NEW HEBRIDES	14
1	9	14	1	52			33			4.92	4.80	LOCAL PMG 8.1	16
1	9	14	6	30			33			3.78	4.50	LOCAL ANT 3.4	8
1	9	15	27				33			3.94	5.00	LOCAL PMG 6.7	16
1	9	17	21	2			33			3.85	4.90	LOCAL ANT 3.3	8
1	9	17	35	11			33			3.23	4.10	LOCAL ARE 4.9	8
1	9	18	22	33	3.3S	29.4E	33			5.04	4.81	REPUBLIC OF THE CONGO	37
1	9	21	16	8	4.3S	128.5E	174			5.70	5.30	BANDA SEA	23
1	9	21	27	29	16.6S	174.8W	270			4.55	4.60	TONGA IS	12
1	10	5	18	37	18.8N	106.3W	33			4.42	4.26	JALISCO MEXICO COAST	5
1	10	6	47	4	36.7N	70.8E	193					HINDU KUSH	48
1	10	13	49	55			33			3.66	3.80	LOCAL ALQ 7.8	34
1	10	17	14	7	52.6N	157.2E	125					KAMCHATKA	19
1	10	17	41	21			33			4.07	5.10	LOCAL PMG 8.2	16
1	10	19	54	46	13.1N	146.5E	61			5.35	5.00	MARIANA IS	18
1	10	20	13	6	4.2S	104.6E	211					SUMATRA	24
1	11	1	7	28	37.7N	101.6E	33			4.95	4.60	TSINGHAI CHINA	27
1	11	6	42	41	7.5N	82.5W	33			4.95	4.95	S COAST OF PANAMA	6
1	11	8	21	52			33			4.07	5.10	LOCAL IST 3.9	30
1	11	11	41	40	35.7N	70.7W	127			8.78	7.70	HINDU KUSH	48
1	11	11	53	54			33			4.22	5.20	LOCAL PMG 8.2	16
1	11	12	11	42			33			4.86	5.20	LOCAL PMG 8.6	16
1	11	12	12	16	45.0S	75.7W	33	6.1		6.04	5.48	S CHILE COAST	8
1	11	14	36	11	12.6N	88.2W	33			5.36	5.02	OFF EL SALVADOR	6
1	11	14	39	30			33			3.25	4.50	LOCAL ANT 3.8	8
1	11	16	7	37	24.3S	176.1W	55					TONGA IS	12
1	11	17	5	42	29.4S	178.6W	225			5.17	4.86	KERMADEC IS	12
1	11	19	59	58			33			4.41	5.30	LOCAL PMG 7.9	16
1	12	3	40	35	4.8N	76.7W	102			5.67	5.29	N COLOMBIA	7
1	12	4	19	28	15.1N	120.5E	83			5.59	5.30	LUZON PI	22
1	12	6	2	10	16.7N	98.3W	33			4.84	4.51	OAXACA MEXICO COAST	5
1	12	6	20	14	36.1N	69.6E	97			5.42	5.03	HINDU KUSH	48
1	12	9	13	4	1.9N	129.3E	112			5.84	4.80	HALMAHERA	23
1	12	12	12	37	53.0N	170.6W	105					FOX IS	1
1	12	10	53	20			33			3.18	4.50	LOCAL PMG 6.7	16
1	12	20	10	35			33			3.24	4.50	LOCAL PMG 1.7	16
1	12	23	21	52	7.1N	125.2E	84			5.69	5.16	MINDANAU PI	22
1	13	2	39	39	32.7N	116.5W	33			3.24	4.23	S CALIFORNIA	3
1	13	4	16	44	15.7S	174.8W	236			4.89	3.50	TONGA IS	12
1	13	5	7	58			33			3.28	4.00	S PERU	8
1	13	6	44	22			33			4.73	5.10	N CHILE	8
1	13	7	53	5	2.1N	125.4E	144			6.51	5.75	N CELEBES REGION	23
1	13	12	49	30	6.5S	149.3E	29			5.36	5.90	NEW BRITAIN	16
1	13	13	43	42	14.0S	171.2E	634			4.94	4.89	NEW HEBRIDES IS	13
1	13	16	21	13	49.7S	163.7E	33			5.07	5.60	AUCKLAND IS	11

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	13	17	20	19	32.0S	68.7W	113			3.48	4.70	SAN JUAN ARGENTINA	8
1	13	23	29	8			33			3.65	3.70	LOCAL PMG 3.5	16
1	14		50	39	17.2S	168.1E	33			6.24	6.10	NEW HEBRIDES IS	14
1	14	2	18	2	52.2N	150.1W	91			4.49	4.25	CENTRAL ALASKA	1
1	14	5	26	7			33			3.75	4.90	LOCAL QUE 7.5	47
1	14	9	50	31	12.2S	166.6E	145			4.07	4.70	NEW HEBRIDES IS	14
1	14	11	19	48	21.2S	169.3E	33			5.51	5.07	LOYALTY IS	14
1	14	15	35	16	20.0S	175.0W	33			4.26	5.20	TONGA IS	12
1	14	18	33	25	45.7N	26.6E	132	5.3		4.63	4.73	ROMANIA	51
1	15	1	32	20	68.9N	17.1W	33			5.07	4.56	DENMARK STRAIT	40
1	15	2	32	39	13.4N	145.3E	38			5.68	4.95	MARIANA IS	17
1	15	4	25	18			33			3.20	4.50	LOCAL MAN 1.2	22
1	15	5	23	10	69.0N	16.6W	33	5.3		5.20	4.71	JAN MAYEN REGION	40
1	15	6	32	30	37.4S	73.4W	42			4.42	4.27	CHILE COAST	9
1	15	7	59	57			33			4.53	5.30	LOCAL PMG 8.4	16
1	15	9	47	43	10.6S	164.9E	89			5.68	5.10	SOLOMON IS	15
1	15	12	22	29	36.7N	102.1E	33			4.22	4.20	TSINGHAI CHINA	27
1	15	12	49	45			33			4.88	5.60	LOCAL PMG 8.2	16
1	15	13	8	57	24.9N	122.0E	47			5.65	5.27	FORMOSA COAST	21
1	15	13	30	35			33			3.59	4.80	LOCAL ARE 4.2	8
1	15	13	50	28	11.5N	87.8W	33			3.75	3.80	W NICARAGUA COAST	5
1	15	15	4	15	36.0N	23.9E	81			4.93	4.70	MEDITERRANEAN SEA	30
1	15	17	39	19	17.1S	179.6W	276			4.71	4.96	FIJI IS	13
1	15	17	11	9	38.2N	75.8E	153			3.41	3.90	N INDIA	48
1	15	17	26	34	20.5S	177.9W	496			5.59	5.39	FIJI IS	12
1	15	21	25	16						3.03	4.40	LOCAL ATU 1.6	30
1	15	22	17	50	31.3S	13.4W	33			5.69	5.43	S ATLANTIC OCEAN	37
1	16		43	45			33			3.25	4.50	LOCAL ARE 3.6	8
1	16	3	14	6	54.0S	133.5W	33			5.83	5.16	S PACIFIC OCEAN	43
1	16	3	52	56	7.5N	74.5W	33			4.42	4.48	COLOMBIA	7
1	16	4	49	12	9.7N	93.9E	70			4.73	4.80	NICOBAR IS	24
1	16	5	22	24			33			3.23	4.50	LOCAL ANT 3.7	8
1	16	5	44	52	51.3N	179.9W	38			5.64	5.08	ANDREANOF IS	1
1	16	6	38	40	54.2N	34.9W	33			4.83	4.45	SW OF ICELAND	32
1	16	6	44	57	54.3N	35.2W	33			5.01	4.67	SW OF ICELAND	32
1	16	5	00	16						3.04	4.40	LOCAL ANT 3.0	8
1	16	7	2	22	41.1N	41.2E	33			4.19	4.50	NE TURKEY	30
1	16	12	32	37	54.4N	35.0W	33			4.89	4.56	SW OF ICELAND	32
1	16	14	34	16			33			3.68	4.65	N CHILE	8
1	16	15	9	17	24.0S	68.2W	150			4.64	4.90	N CHILE	8
1	16	15	3	17	36.3N	70.3E	243			2.25	3.70	HINDU KUSH	48
1	16	15	1	2	34.0N	136.8E	33					S HONSHU COAST	20
1	16	16	21	8	11.1S	111.6E	94			5.75	5.00	S OF JAVA	24
1	16	20	2	39			33			4.27	5.20	LOCAL PMG 6.3	16
1	16	20	16	23			33			3.66	4.80	LOCAL QUE 7.3	47
1	16	20	20	56	4.2S	76.2W	190			3.48	4.65	PERU	8
1	16	21	8	39	11.1S	111.6E	94			5.38	5.17	S OF JAVA	24
1	16	22	20	40			33			3.86	4.90	LOCAL PMG 6.9	16
1	16	22	43	32						3.04	4.40	LOCAL PMG 5.7	16
1	17	3	27	2	43.6S	83.6W	33			4.82	4.53	W OF CHILOE CHILE	9
1	17	3	52	42	52.3N	152.5E	454			4.48	4.10	SEA OF OKHOTSK	46
1	17	4	22	22	10.6S	78.7W	46			4.05	4.50	OFF PERU COAST	8
1	17	4	42	43	5.3S	151.7E	72			4.45	5.30	NEW BRITAIN	15
1	17	5	44	3			33			4.83	4.40	LOCAL PMG 4.4	16
1	17	5	56	54	14.0N	120.6E	207			4.81	4.50	LUZON PI	22
1	17	12	11	4			33			3.29	4.00	LOCAL NNA 4.5	8
1	17	17	19	51			33			3.53	4.70	LOCAL NNA 3.8	8
1	17	19	31	13	7.6S	75.3W	201			4.17	4.72	PERU	8
1	17	20	41	14	25.6N	125.2E	140			5.72	5.32	RYUKYU IS	20
1	18	3	12	6	33.1N	135.8E	425			5.08	4.87	S OF HONSHU	20

MO	DA	HR	MN	SEC	LAT	LONG	DÉP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	18	5	4	12			33			3.29	4.10	LOCAL QUE 7.4	47
1	18	5	42	32	14.9S	167.6E	66			3.84	4.10	NEW HEBRIDES IS	14
1	18	5	49	18	32.0S	117.1E	35			4.08	4.50	W AUSTRALIA	38
1	18	5	52	11			33			4.53	5.30	LOCAL PMG 7.7	16
1	18	12	33	50	46.5N	154.2E	33			5.15	4.70	KURILE IS	19
1	18	21	16	38	11.0S	167.0E	33			5.94	5.76	SANTA CRUZ IS	14
1	19	2	35	6	38.8N	74.8E	33			5.08	4.80	SINKIANG CHINA	27
1	19	3	25	7			33			4.96	5.60	LOCAL PMG 8.6	16
1	19	6	3	18			33			3.11	4.50	LOCAL ANT 3.5	8
1	19	7	4	53			33			4.50	5.30	LOCAL PMG 8.2	16
1	19	7	22	24	40.9N	142.4E	33			4.96	4.60	S OF HOKKAIDO JAPAN	19
1	19	9	24	3			33			4.05	4.40	LOCAL PMG 3.5	16
1	19	10	46	59			33			3.27	4.60	LOCAL PMG 2.9	16
1	19	19	29	4	16.9N	85.0W	33			4.54	4.55	OFF N HONDURAS COAST	7
1	19	19	50	59	17.0N	85.0W	33			4.46	4.36	OFF N HONDURAS COAST	7
1	20		19	2	23.7S	180.0E	550			5.11	4.90	FIJI IS	12
1	20	8	56	6	51.9N	173.2W	30			5.24	4.72	ANDREANOF IS	1
1	20	9	24	40	44.9N	110.9W	28					YELLOWSTONE PARK	34
1	20	10	56	51	50.3N	129.4W	31			4.02	3.80	VANCOUVER IS REGION	2
1	20	12	3	36			33			3.93	5.00	LOCAL ANT 3.3	8
1	20	13	16	27	26.4N	110.7W	27			4.16	4.40	CALIFORNIA GULF	4
1	20	19	2	55	10.1S	161.5E	97			3.92	4.53	SOLOMON IS	15
1	20	19	24	18			33			3.43	4.70	LOCAL BAG 3.5	22
1	20	22	21	29	26.7N	110.7W	37			3.51	4.47	CALIFORNIA GULF	4
1	20	22	37	29	15.4S	167.7E	107			4.79	4.96	NEW HEBRIDES IS	14
1	21	4	15	50	34.3S	69.7W	183			4.38	4.37	MENDOZA ARGENTINA	8
1	21	4	25	5	53.3N	157.4E	33			5.67	4.90	S KAMCHATKA	19
1	21	5	48	1	5.5S	149.0E	173			4.49	5.13	NEW BRITAIN	16
1	21	7		45	60.5S	27.2W	33			5.32	5.02	SANDWICH IS REGION	10
1	21	7	38	57	9.3N	83.0W	88			3.84	4.60	PANAMA-COSTA RICA	6
1	21	8	42	53			33			3.99	4.75	LUZON PI	22
1	21	9	41	1			33			4.52	5.30	LOCAL ARE 6.4	8
1	21	9	46	34	19.7S	177.4W	543			5.52		FIJI IS	12
1	21	10	35	39	3.0S	136.2E	57			5.26	5.22	W NEW GUINEA	16
1	21	11	56	15	2.7S	150.1E	50			5.23	5.50	NEW IRELAND	15
1	21	14	47	5	50.5N	151.2W	67			4.56	3.80	KENAI PENINSULA	1
1	21	16	11	39			33			3.29	4.60	LOCAL PMG 4.0	16
1	21	18	35	41	18.0S	175.4W	64			4.59	4.50	TONGA IS	12
1	21	18	56	42	4.3S	152.5E	110			4.14	5.10	NEW IRELAND	15
1	21	20	2	59			33			3.52	4.70	LOCAL PMG 4.0	16
1	21	20	26	2			33			3.17	4.50	LOCAL MAN 2.0	22
1	21	21	2	27			33			3.75	4.30	LOCAL QUE 7.5	47
1	22	4	55	16	21.5N	49.3E	33			4.22	3.40	TIBET	26
1	22	8	32	33	11.3S	74.7W	33			3.80	4.15	PERU	8
1	22	11	29	41	30.8S	72.2W	33			4.15	4.43	CHILE COAST	8
1	22	15	27	36	25.3S	179.5E	530			3.78	5.30	S OF FIJI IS	12
1	22	16	7	14	48.3N	155.2E	50			4.59	4.30	KURILE IS	19
1	22	16	11	42	48.4N	155.2E	50			4.62	4.20	KURILE IS	19
1	22	17	7	10	14.2S	168.5E	33			5.01	6.30	NEW HEBRIDES IS	14
1	22	20	46	37	12.2S	177.6W	546			3.32	4.70	FIJI IS	12
1	22	23	2	6	5.5S	146.6E	97			5.21	5.06	E NEW GUINEA	16
1	23	4	32	23	48.9N	156.0E	50					KURILE IS	19
1	23	14	39	49	22.6S	178.3W	299					S FIJI IS	12
1	23	23	1	34			33			3.79	4.00	LOCAL QUE 6.6	47
1	24	2	22	2	8.4N	60.8W	66			4.99	4.60	OFF VENEZUELA COAST	7
1	24	9	29	11	5.0S	112.6E	493			5.11	5.10	JAVA SEA	24
1	24	10	14	52	10.1S	160.8E	33			5.00	4.94	SOLOMON IS	15
1	24	12	2	1	15.2S	173.6W	33			5.26	4.85	TONGA IS	12
1	24	13	30	51			33			4.72	5.10	LOCAL PMG 12.1	16
1	24	15	42	23	28.6N	56.4E	100			4.82	4.74	S IRAN	47

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	24	18	58	12			33			4.97	5.60	LOCAL PMG 7.6	16
1	24	21	4	30			33			3.18	4.50	LOCAL PMG 4.3	16
1	24	21	43	13	47.5N	121.9W	33			3.70	4.03	WASHINGTON	2
1	24	22	27	37	8.0N	126.8E	67			6.11	5.34	E MINDANAO COAST	22
1	24	22	44	16	8.0N	126.6E	44			5.03	5.13	MINDANAO PI	22
1	24	23	22	16	7.7N	126.0E	150			4.66	4.63	NEAR MINDANAO COAST	22
1	25		5	35	51.9N	148.9W	78			3.86	3.70	S ALASKA	1
1	25		16	6	20.3S	169.6E	135			5.74	5.19	LOYALTY IS	14
1	25		56	15			33			3.38	3.80	LOCAL PMG 3.4	16
1	25	04	10	36	8.0N	127.0E	70					NEAR E MINDANAO COAST	22
1	25	8	43	21			33			3.97	5.00	LOCAL PMG 4.1	16
1	25	12	49	42	21.8N	143.8E	190			5.60	5.15	MARIANA IS REGION	18
1	25	13	1	53	51.4N	178.1E	33			5.11	4.65	RAT IS	1
1	25	14	32	4	4.6S	147.4E	33			5.28	5.16	N NEW GUINEA COAST	16
1	25	14	33	24			33			3.19	4.20	LOCAL NNA 3.7	8
1	25	15	55	28			33			3.75	4.90	LOCAL PMG 6.7	16
1	25	16	14	8	21.1S	179.2W	603					FIJI IS REGION	12
1	25	16	56	40	17.5S	176.2W	33			4.69	5.10	TONGA IS	12
1	25	18	49	52			33			3.33	4.60	LOCAL PMG 4.8	16
1	25	20	21	32	19.0S	173.3W	129			5.65	4.87	TONGA IS	12
1	26	3	27	22	66.6N	13.6E						W NORWAY COAST	40
1	26	3	58	4	71.6N	9.2W	33					JAN MAYEN IS	40
1	26	3	58	44			33			4.41	5.30	LOCAL LUN 6.4	3
1	26	13	46	37			33			3.76	4.80	LOCAL TUL 6.4	31
1	26	14	3	19			33			3.48	4.70	LOCAL ANI 7.5	8
1	26	19	12	2	15.7S	172.9W	33			4.46	4.42	TONGA IS	12
1	26	21	20	41	4.6N	76.5W	92			4.87	4.72	COLOMBIA	8
1	27	00	57	27	15.2S	175.3W	85					TONGA IS	12
1	27	1	6	55	25.6N	128.3E	61			5.62	5.13	RYUKYU IS	20
1	27	1	44	34	66.0N	162.4W	33			6.20		SEWARD ALASKA	1
1	27	2	1	20	44.7N	10.0E						N ITALY	31
1	27	3		38	31.6N	115.7W	33	4.7		3.70	4.41	BAJA CALIFORNIA	3
1	27	11	47	36	59.4N	153.4W	94			4.88	4.51	GULF OF ALASKA	1
1	27	15	24	46	44.3N	114.5W	31			4.26	4.63	IDAHU	34
1	27	15	38	15	26.2N	127.9E	109			4.21	4.65	RYUKYU IS	20
1	27	16	41	29			33			3.11	4.05	N CHILE	8
1	27	16	52	40	10.5S	165.0E	107			5.22	5.10	SANTA CRUZ IS	15
1	27	18	46	14	5.2S	152.3E	72			5.44	5.20	NEW BRITAIN	15
1	27	19	35	14	41.2N	49.8E	33	5.9		5.86	5.63	CASPIAN SEA	30
1	28	2	12	14	10.8S	76.7W	105			5.39	5.12	CENTRAL PERU	8
1	28	2	20	44			33			3.55	4.30	N CHILE	8
1	28	4	5	30	43.5N	144.6E	33			5.42	4.88	S COAST HOKKAIDO JAPAN	19
1	28	5	27	18	16.8S	173.5W	88			2.26	3.60	TONGA IS	12
1	28	7	47	33	16.7S	172.5W	154			3.91	3.90	TONGA IS REGION	12
1	28	9	41	40			33			4.42	5.30	LOCAL QUE 7.6	47
1	28	10	3	21	52.4S	159.6E	33				5.60	MACQUERIE IS	11
1	28	10	39	31	19.0S	169.6E	220			5.38	5.04	NEW HEBRIDES IS	14
1	28	11	14	35			33			4.38	5.30	LOCAL PMG 7.9	16
1	28	12	12	19	2.6S	149.9E	33	6.5		6.37	5.49	NEW BRITAIN	15
1	28	12	55	13			33			4.45	5.30	LOCAL KUN 5.5	36
1	28	13		50	54.7N	161.6W	33	6.6		6.45	5.71	ALASKA PENINSULA	1
1	28	13	49	55	55.8N	162.9W	33			5.74		ALASKA PENINSULA	1
1	28	13	50	28	19.7S	178.1W	587			4.91	5.03	FIJI IS	12
1	28	16	7	19	31.2S	177.7W	33			5.18	5.04	KERMADEC IS	12
1	28	17	05	11	29.8S	178.4W	182					KERMADEC IS	12
1	29	1	31	6	21.8S	178.7W	120			5.59	5.20	FIJI IS	12
1	29	3	35	36			33			3.15	4.50	LOCAL ANI 3.4	8
1	29	4	31	30	5.8N	78.4W	31			4.44	4.63	S OF PANAMA	6
1	29	7	25	48	4.7S	153.5E	126			5.44	5.33	NEW BRITAIN	15
1	29	7	27	18	12.7S	66.1E	33			5.46	5.30	INDIAN OCEAN	33

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
1	29	8	1	27	40.3N	144.2E	27			4.33	4.20	OFF COAST HONSHU JAPAN	19
1	29	9	5	19			33			3.58	4.80	LOCAL ARE 5.2	8
1	29	9	21	14	49.7N	154.9E	126	6.4		6.16	5.50	KURILE IS	19
1	29	16	54	3	15.2S	173.4W	33			4.00	4.70	TONGA IS	12
1	29	18	18	32			33			3.48	4.70	LOCAL PMG 3.6	16
1	29	20	33	27	21.5S	68.6W	73			5.63	5.25	CHILE-BOLIVIA BORDER	8
1	29	21	7	57	12.9N	143.2E	144			5.47	5.48	MARIANA IS	18
1	29	22	50	23	52.7N	168.4W	33			4.85	4.90	FOX IS	1
1	30	4	39	56	54.8N	161.6W	33			5.57	5.01	ALASKA PENINSULA	1
1	30	5	51	1	44.9N	110.8W	33			2.50	4.10	YELLOWSTONE PARK	34
1	30	6	8	25	.2N	123.4E	33			4.97	4.85	N CELEBES	23
1	30	7	8	40			33			3.85	4.90	LOCAL PMG 3.3	16
1	30	9	51	24	50.8N	157.4E	31					S KAMCHATKA COAST	19
1	30	10	10	4	55.6S	28.3W	33	6.8		6.91	5.80	SANDWICH IS REGION	10
1	30	10	33	59	29.7N	80.5E	57			5.28	5.07	INDIA-NEPAL	26
1	30	14	41	32			33			3.94	4.30	LOCAL PMG 3.8	16
1	30	23	05	10	39.8N	104.6W	33				3.20	COLORADO	34
1	31	3	9	58	63.5N	149.4W	56			4.64	4.35	CENTRAL ALASKA	1
1	31	4	46	8	68.2N	12.0E						W NORWAY COAST	40
1	31	5	6	46	27.9N	126.3E	33	6.1		6.24	5.72	RYUKYU IS	20
1	31	11	27	30	54.7N	161.7W	33			5.47	5.00	ALASKA PENINSULA	1
1	31	11	32	20			33			4.11	5.10	LOCAL PMG 6.9	16
1	31	15	7		35.8N	21.9E	33			4.34	4.85	IONIAN SEA	30
1	31	16	21	53	21.5S	178.1W	373			4.91	5.20	FIJI IS	12
1	31	17	6	4	41.4N	50.2E	33			5.24	5.07	TURKMEN SSR	29
1	31	18	44		52.7N	168.7W	33			5.43	5.05	FOX IS ALEUTIANS	1
1	31	19	10	23	54.2N	167.5E	53			5.25	4.60	BERING SEA	1
1	31	20	31	50	10.6S	165.2E	50			4.65	5.04	SANTA CRUZ IS	39
1	31	21	12	34			33			3.63	4.80	LOCAL QUE 6.1	47

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	1	3	58	58						3.03	4.30	LOCAL LAH 1.6	47
2	1	8	45	12			33			3.10	4.40	LOCAL PMG 4.1	16
2	1	9	45	4	8.5S	159.1E	144			3.46	4.50	SOLOMON IS	15
2	1	10	16	34	3.0S	131.0E	33			4.45	4.45	CERAM REGION	16
2	1	22	42	15	19.8S	178.2W	200					FIJI IS	12
2	2	4	51	8	16.2S	178.0E	33			5.37	4.10	FIJI IS	13
2	2	7	50	45	9.2S	120.2E	50			4.50	4.15	SUMBA STRAIT	24
2	2	11	48	20	19.7S	174.6W	77			5.12	4.96	TONGA IS	14
2	2	11	51	42	39.0N	122.8W	33				3.40	LAKE COUNTY CALIF	3
2	2	12	9	37	39.0N	122.8W	33			2.61	4.10	LAKE COUNTY CALIF	3
2	2	16	38	48	7.1S	155.7E	96			3.18	4.25	SOLOMON IS	15
2	2	13	58	19	36.8N	121.5W	16			2.75	3.60	SAN BENITO CALIF	3
2	2	16	43		20.1N	121.7E	33			3.66	4.75	BATAN IS	21
2	2	18	1	13	51.3N	179.1W	33					ANDREANOF IS	1
2	2	19	32	15	18.8N	81.5W	71			4.74	4.50	CAYMAN IS	7
2	2	21	12	15	11.4N	60.7W	70		3.5			LESSER ANTILLES	7
2	2	21	25	38	13.9N	92.1W	33			4.80	4.43	W GUATEMALA COAST	5
2	2	23	14	57			33			4.73	5.20	LUZON PI	22
2	3	1	48		23.9S	179.7W	500			4.96	4.63	FIJI IS	12
2	3	4	23	28	15.1N	92.0W	166			4.92	4.27	W GUATEMALA COAST	5
2	3	11	18	8	8.8S	75.8W	33			3.41	4.10	PERU	8
2	3	12	52	14	7.6N	72.1W	33			5.34	4.85	VENZUELA-COLOMBIA	7
2	3	14	25	30	79.0N	21.2W	33			4.24	4.50	S GREENLAND	40
2	4	1	17	3	6.3S	149.1E	36			4.61	4.70	NEW BRITAIN REGION	16
2	4	3	30	4	10.7N	60.7W	175		4.3			LESSER ANTILLES	7
2	4	4	21	48			33			4.40	4.60	LUZON PI	22
2	4	5	14	26	27.3N	54.2E	34			4.50	4.53	S IRAN	29

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	4	7	18	6	27.7N	54.6E	33			4.84	4.65	S IRAN	29
2	4	9	17	20	17.4S	178.8W	552			5.58	5.20	FIJI IS.	13
2	4	10	4	3	51.6N	176.6W	33			4.66	4.00	ANDREANOF-ALEUTIAN	1
2	4	12	28	38	5.1N	82.4W	45			5.26	4.65	S OF PANAMA	6
2	4	15	4	5	17.3S	167.9E	33			4.96		NEW HEBRIDES IS	14
2	4	16	15	23	26.1N	124.1E	33					RYUKYU IS	20
2	4	18		41	16.5S	173.6W	33			2.25	3.90	SAMOA IS	12
2	4	18	14	3			33			3.59	3.80	LOCAL TUC 6.4	34
2	4	20	57	11	48.2N	153.9E	57					KURILE IS	19
2	4	22	1	56			33			4.67	5.40	LOCAL NNA 4.4	8
2	4	23	20	27			33			4.90	5.30	LOCAL QUE 7.6	47
2	4	23	21	9	48.5N	154.9E	85			6.08	5.36	KURILE IS	19
2	5	1	47	50		123.8E	164			4.35	4.30	CELEBES REGION	23
2	5	4	20	56			33			3.98	5.00	LOCAL ARE 6.5	8
2	5	5	4	3	19.2N	147.1E	38			5.43	4.97	MARIANA IS	18
2	5	7	19	30	59.4N	156.4W	33				5.10	ALASKA	1
2	5	7	29		44.3N	114.5W	33			3.04	4.40	CENTRAL IDAHO	34
2	5	12	8	20	53.7N	165.4W	33			5.33	4.90	FOX IS ALEUTIANS	1
2	5	12	21	6	47.3N	11.6E						AUSTRIA	36
2	5	14	3	17	31.8S	179.4W	137			4.81	4.90	KERMADEC IS	12
2	5	17	49	38	14.2N	94.0W	33			5.24	4.70	CHIAPAS MEXICO COAST	5
2	5	19	29	30	31.9S	179.0W	68					KERMADEC IS	12
2	5	20	39	21	38.4S	73.2W	41	6.1		6.34	5.39	CHILE COAST	9
2	6	1	21	29	38.4S	73.6W	33	5.4		5.66	4.95	NEAR CHILE COAST	9
2	6	1	42	58			33			4.05	5.00	LOCAL MAN 2.2	22
2	6	1	55	59	7.9S	119.9E	306			3.33	3.80	FLORES SEA	22
2	6	2	31	8	6.8S	123.5E	637			5.17	4.90	FLORES SEA	24
2	6	3	27	56	6.8N	73.2W	108			5.72	4.99	COLOMBIA-VENEZUELA	7
2	6	5	41	23	5.3S	145.0E	90			3.92	4.55	NE NEW GUINEA COAST	16
2	6	5	53	53	18.1S	177.6W	500			4.60	4.75	FIJI IS	13
2	6	6	16	39	14.9N	95.0W	33			3.70	3.60	CHIAPAS MEXICO COAST	5
2	6	7	1	47	7.4N	82.6W	61			5.35	4.81	NEAR S PANAMA COAST	6
2	6	10	20	26	3.5S	146.0E	33			5.44	5.24	BISMARCK SEA	16
2	6	12	46	26	22.2S	171.3E	101			4.77	4.80	LOYALTY IS	14
2	6	14	13	27			33			3.76	4.50	LOCAL PMG 3.8	16
2	6	17	35	46	0.0S	124.1E	110	4.2		5.43	3.70	MOLUCCA SEA	16
2	6	18	17	10	55.6N	166.1E	33			5.44	5.03	KOMANDORSKIE IS	1
2	6	20	11	54			33			4.11	4.50	LOCAL PMG 5.5	16
2	6	20	46	51	56.7S	28.8W	33			5.02	4.50	SANDWICH IS	10
2	6	21	43	16	28.2S	67.4W	19			5.79	5.06	ARGENTINA	8
2	7	1	23	42	17.7S	178.7W	559		4.3	4.69	4.48	FIJI IS	12
2	7	2	6	36	8.2S	119.4E	51			4.25	4.40	SUMBABA	24
2	7	3	29	42	59.6S	147.9E	33		5.0	5.44	5.10	SW OF MACQUARIE IS	45
2	7	5	9	43			33			3.29	4.60	LOCAL QUE 7.0	47
2	7	12	12	31	36.4N	70.8E	214		3.7	3.48	4.65	HINDU KUSH	47
2	7	14	56	22	1.0N	99.1E	33					NW SUMATRA	24
2	7	15	44	28	15.2S	173.6W	33			3.19	4.50	SAMOA IS	12
2	7	16	44	45	14.4N	53.3E	33			5.10	4.00	ADEN GULF	33
2	7	17	8	18	26.5S	176.6W	33		4.8	5.07	4.82	KERMADEC IS	12
2	7	17	36	53	14.7N	119.6E	151		4.5	4.47	4.90	OFF W LUZON COAST	22
2	7	20	11	43			33			3.35	4.10	LOCAL PMG 4.2	16
2	8	00	7	11	3.6S	130.4E	60					CERAM	23
2	8	2	29		26.9S	176.7W	190		4.7	4.60	4.20	KERMADEC IS	12
2	8	4	7	28	54.2N	35.0W	33			4.25	4.00	N ATLANTIC OCEAN	32
2	8	6	3	10	26.6N	55.2E	33		4.1	4.79	4.90	PERSIAN GULF	29
2	8	8	39	50			33			4.00	4.70	LOCAL PMG 5.8	16
2	8	10	2	15	54.1N	159.8E	33		4.1			E KAMCHATKA	19
2	8	13	26	21	50.9N	156.6E	63		4.4	4.09	4.00	KAMCHATKA	19
2	8	18	18	7	12.9S	170.2E	628			4.95	4.90	NEW HEBRIDES IS	14
2	8	22	30	27	46.7N	153.6E	56		4.2	4.85	4.55	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	8	22	40	30	14.0S	70.3W	186			3.52	4.90	S PERU	8
2	9	2	14	41	20.3S	169.1E	48					LOYALTY IS	14
2	9	3	53	6	36.4N	137.9E	33	4.4	5.18	4.70		HONSHU JAPAN	19
2	9	5	50	4	7.3S	130.3E	220	4.3	4.72	4.70		TANIMBAR IS	24
2	9	7	59	52	51.2N	179.8W	33	4.5	5.75	5.03		ANDREANOF IS	1
2	9	8	36	26	15.0S	167.4E	127	4.5	5.23	4.90		NEW HEBRIDES IS	14
2	9	16	5	3	43.7N	150.6E	33	4.8	5.32	4.67		KURILE IS	19
2	9	16	55		35.9S	177.9E	172	4.8	5.21	4.90		OFF NEW ZEALAND COAST	11
2	9	17	7	59	24.0S	179.1E	550	4.7	4.98	4.65		S OF FIJI IS	12
2	9	20	40	20	44.5N	27.9W	33					AZORES REGION	32
2	9	21	47	21			33			3.40	4.00	LOCAL PMG 3.6	16
2	9	23	1	18	21.7S	176.9W	66	4.8	4.80	4.53		TONGA IS	12
2	10	3	44	5			33			3.73	4.80	LOCAL ARE 5.6	8
2	10	5	2	34	7.8N	83.4W	33	4.0				S PANAMA	6
2	10	5	10	40	54.1N	166.5W	33	4.1	4.94	4.50		FOX IS	1
2	10	6	48	31	52.0N	108.1E	27		4.60	4.40		LAKE BAIKAL USSR	28
2	10	7	37	44	17.3S	177.4W	343	4.7	6.40	5.80		FIJI IS	13
2	10	11	11	48			33			3.47	4.70	LOCAL PMG 3.5	16
2	10	11	22	59	14.1S	167.1E	132			5.04	5.70	NEW HEBRIDES IS	14
2	10	12		42	42.4N	142.1E	54	4.3	5.15	4.95		S HOKKAIDO JAPAN	19
2	10	15	5	25	53.5N	33.4W	41	4.9	5.07	4.71		N ATLANTIC OCEAN	32
2	10	16	36	11	44.6N	28.1W	33		5.29	4.70		AZORES IS	32
2	10	21	35	48	44.6N	147.8E	67	5.0	5.89	5.20		KURILE IS	19
2	10	23	21	1	4.1N	126.3E	40	4.3	5.14	5.00		CELEBES SEA	23
2	11	4	36	30	29.8S	179.1E	528	4.6	4.80	4.40		KERMADEC IS	12
2	11	5	42	50			33			3.80	4.10	LOCAL ARE 6.2	8
2	11	7	16	14	19.7S	177.7W	543	4.7	4.74	4.70		TONGA IS	12
2	11	10	36	16	45.9N	15.5E	5					YUGOSLAVIA	36
2	11	10	56	25	24.6S	179.8E	491	4.5	5.08	4.90		KERMADEC IS	12
2	11	12	22	26	15.7S	174.7W	23	4.8	4.81	4.30		TONGA IS	23
2	11	15	5	39	67.6N	146.7W	33			4.42	4.23	ALASKA	1
2	11	23	26	15			33			4.70	5.50	LOCAL ARE 6.0	8
2	12		26	19	17.7N	122.3E	33	4.5	5.52	4.77		W LUZON COAST	22
2	12		28	9			33			3.51	4.30	LOCAL ARE 5.7	8
2	12		34	6	36.3S	96.9W	33			4.91	4.60	SW OF EASTER IS	43
2	12	2	17	18						3.00	4.40	LOCAL NNA 1.3	8
2	12	2	34	17			33			4.15	4.60	LOCAL PMG 5.6	16
2	12	7	14	10	21.7S	169.8E	30					LOYALTY IS	14
2	12	8	43	37	19.0N	107.4W	33	4.4	4.32	4.13		REVILLA GIGEDO IS	5
2	12	14	22	03						3.05	4.40	LOCAL PMG 3.8	16
2	12	15	9	46	51.5N	177.9W	33	3.7	5.07	4.60		ANDREANOF IS	1
2	12	17	43	59	6.7S	147.1E	120	4.8	5.35	5.90		N NEW GUINEA COAST	16
2	12	23	7	28	17.8S	178.6W	583	5.5	5.35	5.17		FIJI IS	12
2	13		22	51	13.4N	91.0W	116	5.0	5.13	4.52		S GUATEMALA COAST	6
2	13		30	2			33			4.19	5.10	LOCAL ARE 4.5	8
2	13	1	34	40	13.0N	57.9E	33			4.79	4.70	ARABIAN SEA	33
2	13	2	17	5			33			4.67	4.40	LOCAL ARE 6.6	8
2	13	3	06	38	27.6N	55.1E	33	3.9				S IRAN	29
2	13	4	41	55			33			3.69	4.60	LOCAL ARE 4.7	8
2	13	8	50	2	24.5N	121.8E	33	7.2		7.17	6.22	N FORMOSA	21
2	13	9	30	34	24.8N	121.7E	33	5.4	5.87	5.20		N FORMOSA	21
2	13	12	45	10	40.5N	15.8E						S ITALY	31
2	13	14	14	35	23.9S	175.8W	100	4.7	4.04	4.20		TONGA IS	12
2	13	15	1	53			33			3.21	4.40	LOCAL ARE 6.0	8
2	13	18	13	55	9.9S	160.8E	29	6.2		6.44	5.78	SOLOMON IS	15
2	13	19	2	7	24.6N	122.1E	33	5.0	4.97	5.00		N FORMOSA	21
2	13	19	55	36	11.6N	57.7E	33			4.99	4.55	SOCOTRA REGION	33
2	14	23	46	28	19.6N	143.7E	156	3.9				MARIANA IS	18
2	14	6	48	30	10.1S	160.3E	54	5.1	4.61	5.20		SOLOMON IS	15
2	14	7	4	40	7.2S	128.2E	197	6.1	6.38	5.75		BANDA SEA	23

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	14	8	31	59	6.2N	82.5W	33		4.2	5.86	4.90	S OF PANAMA	6
2	14	8	50	36	11.0N	61.3W	33		4.0	4.41	4.10	NEAR N TRINIDAD COAST	7
2	14	10	42	44			33			3.38	4.20	LOCAL PMG 3.8	16
2	14	12	9	11	.9N	30.0W	33		4.6	5.67	5.25	MID-ATLANTIC OCEAN	32
2	14	12	20	8			33			4.13	5.10	LOCAL PMG 3.6	16
2	14	12	43	24	17.7S	168.0E	33			3.98	4.20	NEW HEBRIDES IS	14
2	14	12	48	2	40.4N	19.9E	33	4.4		4.85	4.85	ALBANIA COAST	30
2	14	13	18	56	44.5N	15.5E	36		5.4	4.58	4.57	YUGOSLAVIA	36
2	14	13	40	7	11.9S	166.0E	153		4.1	3.27	3.70	SANTA CRUZ IS	14
2	14	14	9	30	45.2N	148.6E	97		5.1	4.42	4.20	KURILE IS	19
2	14	14	38	32	17.9S	167.6E	40		4.1	3.95	4.20	NEW HEBRIDES IS	14
2	14	15	29	58	9.8S	160.6E	25		5.0	3.97	4.90	SOLOMON IS	15
2	14	18	18	22			33			4.74	5.50	LOCAL ARE 7.8	8
2	14	21	3	43						3.02	3.70	LOCAL PMG 3.4	16
2	14	21	51	13	22.1S	170.3E	33		4.5	5.88	5.53	NEW HEBRIDES IS	14
2	14	21	59	34	22.0S	170.1E	47					NEW HEBRIDES	14
2	14	22	7	54	5.0S	144.6E	80	6.2		6.45	5.60	E NEW GUINEA	16
2	14	22	41	51	3.1S	134.3E	49			5.36	4.93	NEW GUINEA	16
2	15		7	11	22.2S	170.3E	33			4.39	4.50	NEW HEBRIDES IS	14
2	15		48	57	33.2S	179.2W	42		5.3	5.80	5.14	KERMADEC IS	12
2	15	3	8	31	21.7S	169.4E	35			4.18	4.30	LOYALTY IS	14
2	15	5	39	57	22.0S	170.5E	33		4.5	4.23	4.60	NEW HEBRIDES IS	14
2	15	6	54	51	14.9S	178.7W	33		5.0	5.08	4.86	FIJI IS	13
2	15	7	14	52	23.5S	180.0W	523		4.6	4.14	4.43	FIJI IS	13
2	15	10	18	26	40.6N	20.3E	33		4.6	5.06	4.55	ALBANIA	30
2	15	10	55	12	6.1S	151.2E	53		4.8	3.42	3.65	NEW BRITAIN	15
2	15	14	45	10			33			3.25	4.20	LOCAL LAH 1.2	47
2	15	16	20	19	4.3N	96.3E	33		5.7	6.26	5.60	SUMATRA	24
2	15	18	30	36	15.4S	174.3W	140		5.0	3.96	5.00	SAMOA	12
2	15	03	01	41	46.2N	111.0W	33		4.5	2.91	3.98	SW MONTANA	34
2	16	5	44	28	5.7N	126.5E	133		4.3	3.92	4.30	S OF MINDANAO PI	22
2	16	6	21	13	36.7N	38.0E	101		4.1	3.77	3.90	TURKEY COAST	30
2	16	8	4	13	15.1N	46.5W	33		4.5	4.20	4.00	N ATLANTIC OCEAN	32
2	16	8	31	17	17.7S	178.6W	534		4.5	4.52	4.62	FIJI IS	12
2	16	8	31	51	9.7N	122.5E	28			5.11	5.10	NEGROS PHILIPPINES	22
2	16	10	46	27	7.0S	117.3E	561		4.6	5.68	5.28	FLORES SEA	24
2	16	10	58	39			33			3.34	3.80	S PERU	8
2	16	12	12	39	.6S	147.5E	33		5.0	5.34	5.90	ADMIRALTY IS	17
2	16	12	19	31	36.5N	70.5E	216		5.2	5.26	4.82	HINDU KUSH	48
2	16	13	22	13	19.9S	178.3W	562		4.5	4.49	4.85	FIJI IS	12
2	16	17	54	41	17.8S	178.5W	564		4.4	5.48	5.10	FIJI IS	12
2	16	21	32	22	8.5S	80.1W	33		4.8	4.96	4.85	OFF PERU COAST	8
2	16	23	37	8	5.0S	144.5E	82		4.6	4.26	4.70	NEW GUINEA	16
2	17		3	3	54.0N	35.1W	32		3.8	4.46	4.24	N ATLANTIC	32
2	17	2	31	41	21.4N	122.5E	33		4.6	4.47	5.05	RYUKYU IS	21
2	17	3	50	41	17.2N	100.8W	33		4.1	4.50	3.98	GUERRERO MEXICO	5
2	17	5	38	17	36.9N	71.3E	174		4.7	4.82	5.20	HINDU KUSH REGION	48
2	17	6	21	16			33			4.86	5.60	LOCAL ATU 3.4	30
2	17	6	53	20	4.8S	144.2E	35		5.7	5.89	5.52	NEW GUINEA	16
2	17	8	29	24	42.1N	37.2E	33		4.8	4.82	4.50	BLACK SEA	30
2	17	14	11	28			33			3.87	4.90	LOCAL NNA 6.6	8
2	17	15	54	21	23.7S	179.9E	540		4.9	5.26	4.85	FIJI IS	12
2	17	17	10	13	17.1S	175.7W	70		4.9	3.21	4.10	FIJI IS	12
2	17	17	34	29	37.7N	113.2W	33		4.0	3.29	3.93	SW UTAH	34
2	17	17	59	41			33			3.41	4.60	LOCAL MAN 1.2	22
2	17	19	26	31	23.9S	179.8W	520		5.1	4.70	4.77	FIJI IS	12
2	17	20	12	11	43.9N	17.2E	33		5.2	4.45	4.80	YUGOSLAVIA	31
2	18	2	13	11	18.4N	62.5W	25		5.0			LESSER ANILLES	7
2	18	7	8	29	25.3N	121.8E	33			4.92	4.77	N FORMOSA COAST	21
2	18	8	8	48	41.8S	88.5W	33		4.5	5.71	5.00	W OF CHILE	43



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	18	14	12	36	36.2S	90.4W	33		5.2	5.82	5.20	W OF CHILE	43
2	18	14	25	19	36.4N	70.9E	225		4.9	5.31	5.17	HINDU KUSH	48
2	18	14	51	40	30.1S	177.2W	33					KERMADEC IS	12
2	18	15	40	8	1.5N	125.8E	41		4.3	3.82	4.20	CELEBES REGION	17
2	18	18	24	5	58.2N	32.4W	33		4.6	5.33	4.80	N ATLANTIC OCEAN	32
2	18	19	3	1	57.9N	32.2W	33			4.75	4.63	N ATLANTIC OCEAN	32
2	18	21	53	58	33.7N	137.7E	317		4.1	5.30	4.40	S HONSHU COAST	20
2	18		54	38	3.8N	96.1E	87					W SUMATRA COAST	24
2	19	1	22	23	11.1N	124.2E	33			4.85	4.87	CEBU PHILIPPINES	22
2	19	4	51	17			33			3.16	4.50	LOCAL ARE 3.0	8
2	19	5	51	12			33			3.85	4.30	LOCAL NNA 4.4	8
2	19	7	37	14			33			3.89	4.90	LOCAL PMG 6.4	16
2	19	11	59	23	22.2S	171.4E	105		4.4	4.01	4.20	LOYALTY IS	14
2	19	12	17	48	41.1N	142.8E	32		4.2	4.72	4.35	S HOKKAIDO JAPAN	19
2	19	15	28	20	6.2S	128.1E	37		5.3	4.27	4.42	BANDA SEA	23
2	19	16	39	15	55.3S	28.8W	33			5.85	5.42	SANDWICH IS	15
2	19	22	28	14	24.0N	122.9E	33		4.7	4.69	4.66	OFF E FORMOSA COAST	21
2	20	3	21	25	18.0N	62.0W			4.9			LESSER ANTILLES	7
2	20	4	3	4	7.0S	121.2E	33			4.79	4.45	FLORIS SEA	24
2	20	6	46	19	17.2S	178.2W	612		4.4	4.61	4.67	FIJI IS	12
2	20	7	41	22	6.3S	154.0E	37		5.1	5.78	4.80	SOLOMON IS	15
2	20	8	44		22.3S	170.5E	33		5.0	4.55	4.50	LOYALTY IS	14
2	20	12	15	40	17.7S	168.1E	33		4.2	3.99	4.20	NEW HEBRIDES IS	14
2	20	14	14	24	19.2S	177.1W	592		4.5	3.39	4.25	FIJI IS	12
2	20	14	32	8	51.9N	177.9E	33		4.7	5.71	5.03	RAT IS	1
2	20	14	51	18	7.2N	73.4W	127		4.2	4.02	3.90	N COLOMBIA	7
2	20	15	25	5			33			3.12	4.50	LOCAL PMG 4.6	16
2	20	15	29				33			3.71	4.80	LOCAL PMG 4.3	16
2	20	16	45	51	38.8N	139.0E	175			5.12	4.86	OFF W HONSHU COAST	19
2	20	17	7	32	45.7S	78.7W	33		4.6	5.88	4.58	OFF S CHILE COAST	9
2	20	19	40	31	24.6N	122.1E	33		4.7	5.16	5.16	NEAR NE FORMOSA COAST	21
2	21	2	33	35	33.4N	139.2E	168		4.4	5.17	4.90	S OF HONSHU JAPAN	19
2	21	6	9	24			33			3.59	4.50	LOCAL ARE 6.0	8
2	21	7	49	29	42.3N	142.5E	33		4.5	4.94	3.90	S HOKKAIDO JAPAN	19
2	21	12	1	19	40.4N	125.0W	33			3.07	4.42	NEAR CALIF COAST	3
2	21	13	1	7	17.9N	146.5E	88		4.4	4.90	3.60	MARIANA IS	18
2	21	13	16	5	20.6S	175.1W	33		5.2	5.67	5.10	TONGA IS	12
2	21	14	28	29	20.5S	173.9W	29		5.0	5.39	4.85	TONGA IS	12
2	21	15	44	30	.9N	126.8E	101		4.4	5.59	5.30	MOLUCCA SEA	23
2	21	17	14	35	32.7N	20.9E	33	5.3	5.0	5.45	5.08	LIBYA COAST	30
2	21	18	33	7	32.9N	21.1E	33		4.5	4.49	4.80	LIBYA COAST	30
2	21	19	43	52	6.3S	106.7E	39		4.8	4.86	4.80	NW JAVA COAST	24
2	21	19	52	27	6.3S	106.7E	33		5.2	5.05	4.90	JAVA	24
2	21	20	26	44	32.6N	21.0E	33		4.4	4.85	4.86	LIBYA COAST	30
2	21	23	42	35	12.7N	84.9W	33		4.3			NICARAGUA	6
2	22		52	11	6.1S	106.3E	173		4.9	4.88	4.80	JAVA	24
2	22	1	32	25	27.5N	87.7E	33		4.3	4.47	3.90	NEPAL-TIBET BORDER	26
2	22	2	47	22	32.9N	21.1E	33			4.49	4.80	LIBYA COAST	30
2	22	7	10	28	85.0N	98.9E	33		5.0	5.37	4.95	N POLAR REGION	40
2	22	7	23	14	84.7N	104.3E	33		4.8	4.79	4.32	N POLAR REGION	40
2	22	7	58	57	17.8S	178.8W	550		5.0	5.17	4.93	FIJI IS	12
2	22	9	37	52	21.1S	68.1W	98		4.4	4.53	4.31	PERU-CHILE BORDER	8
2	22	10	6	54	1.0S	125.8E	285		4.7	4.97	4.80	MOLUCCA PASSAGE	23
2	22	11	5	42	30.3S	178.6W	113		5.1	5.44	5.10	KERMADEC IS	12
2	22	14	12	54	40.6N	20.5E	33		4.4	4.24	4.12	ALBANIA-GREECE	30
2	22	21	14	6	18.1N	71.3W	50		5.5	5.46	4.88	S DOMINICAN REPUBLIC	7
2	22	21	38	30	4.0S	131.0E	33			3.94	4.40	N CERAM COAST	16
2	22	23	19	58	58.8N	137.2W	33		4.1	4.18	4.05	NEAR SE ALASKA COAST	2
2	23	6	32	30	36.0S	102.5W	33		4.7	5.30	4.74	PACIFIC OCEAN	43
2	23	7	2	38	44.8S	76.1W	33		4.9	4.96	4.53	S CHILE COAST	9

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
2	23	12	37	4			33			4.16	4.50	LOCAL PMG 5.2	16
2	23	17	12	47	49.4N	158.6E	50		4.4	5.30	4.66	KURILE IS	19
2	24		37	1	32.2S	68.5W	33		4.3	3.87	4.35	MENDOZA ARGENTINA	8
2	24	3	57	36	19.4N	146.2E	51			5.14	4.90	MARIANA IS	18
2	24	5	38	20	15.1S	72.5W	105		5.3	4.81	4.57	S PERU COAST	8
2	24	6	36	11	19.7S	177.5W	541		5.0	5.92	5.20	FIJI IS	12
2	24	6	57	56			33			3.71	4.20	LOCAL PMG 3.5	16
2	24	13	7	26	18.3S	175.4W	209		4.5	4.54	4.53	TONGA IS	12
2	24	13	34	15	14.6N	91.4W	135		5.7	5.95	5.27	CENTRAL GUATEMALA	5
2	24	15	24	57	44.9N	112.0W	33			2.06	3.80	SW MONTANA	34
2	24	17	35	14	31.7S	176.5W	33			5.19	4.10	KERMADEC IS	12
2	24	21	34	8	19.5S	179.0W	546		4.8	3.65	3.70	FIJI IS	12
2	24	22	35		26.4N	44.5W	33		4.6	4.87	4.68	N ATLANTIC OCEAN	32
2	24	23	29	36	53.6N	164.3W	33		4.3	4.90	4.60	FOX IS ALLEUTIAN IS	1
2	25		43	24	8.7S	112.6E	106			4.00	4.20	COAST OF S JAVA	24
2	25	2	38	19	7.6S	112.3E	33			4.95	4.50	NEAR S JAVA COAST	24
2	25	4	49	52	15.0N	122.7E	58			5.39	4.75	NEAR E LUZON COAST	22
2	25	7	18	47	51.1N	159.8E	40			3.87	3.80	OFF KAMCHATKA COAST	19
2	25	7	23	53	72.3N	5.3E	33			3.63	4.70	GREENLAND SEA	40
2	25	8	8	20	28.1S	65.4W	32		5.3	5.69	5.08	ARGENTINA	8
2	25	8	58	41	12.2N	88.2W	33		4.2	4.75	4.27	EL SALVADOR COAST	6
2	25	9	11	24	10.4N	121.8E	46		4.5	4.71	4.66	NEAR W PANAY COAST PI	22
2	25	15	54	35	62.5N	150.1W	33		4.1	4.95	4.30	ALASKA	1
2	25	17	11	1	24.4N	123.4E	33		5.3	5.88	5.37	E FORMOSA COAST	21
2	25	18	45	15	42.8N	109.0W	33		4.3	3.26	4.20	WYOMING	34
2	25	19	21	50	19.5N	121.8E	33		3.9	3.97	4.23	N LUZON P!	22
2	25	23	45	16	15.5N	121.3E	33		4.3	4.89	4.62	CENTRAL LUZON	22
2	26	2	13	20	19.3N	121.0E	56		4.3	4.76	4.62	N LUZON COAST	22
2	26	7	52	14	12.8N	144.1E	98			5.06	4.53	MARIANA IS	18
2	26	16	30	13	12.4N	87.4W	33		4.2	4.91	4.40	NICARAGUA COAST	6
2	26	20	14	8	7.5S	146.2E	171	7.1		7.23	6.44	E NEW GUINEA	16
2	26	23	23	19	39.1S	75.1W	33		4.7	5.39	4.83	NEAR S CHILE COAST	9
2	27		10	8	1.0S	78.8W	89		4.1	4.50	4.04	ECUADOR	8
2	27	4	30	1	6.0S	149.4E	520	6.6	5.2	5.43	4.93	NEW BRITAIN	15
2	27	5	7	12	14.5S	173.1W	131		4.4	5.07	3.50	SAMOA IS	12
2	27	5	24	2	6.3S	149.2E	59		4.5	5.58	5.32	NEW BRITAIN REGION	16
2	27	7	34	24	16.2S	173.3W	33		5.4	4.25	4.65	TONGA IS	12
2	27	11		45	14.7S	73.3W	110		5.4	5.69	5.23	PERU	8
2	27	15	28	4			33			3.64	4.60	LOCAL PMG 4.0	16
2	27	16	1	11	16.9N	100.5W	33		4.5	4.14	3.95	GUERRERO MEXICO COAST	5
2	27	17	28	1	38.1N	69.6E	157		3.9	4.21	3.90	TADZHIK SSR	48
2	27	20	28	35	4.6S	152.9E	100		5.0	5.71	5.03	NEW BRITAIN	15
2	27	21	11	32	5.6S	72.3W	33			4.05	4.25	N PERU	8
2	27	21	41	14			33			3.18	4.10	LOCAL PMG 3.8	16
2	27	23	1	24			33			3.12	4.50	LOCAL PMG 3.7	16
2	27	23	10	38	6.2S	149.2E	59		4.5	3.63	4.80	NEW BRITAIN REGION	16
2	27	23	36	20	54.8N	161.6W	33		5.3	4.89	4.62	ALASKA PENINSULA	1
2	28		26	31	44.4N	10.9E						N ITALY	31
2	28	1	6	33	45.9N	146.1E	100		4.6	4.57	4.40	KURILE IS	19
2	28	1	31	13	16.3S	66.0E	33			5.65	4.96	INDIAN OCEAN	33
2	28	2	39	4			33			3.38	4.60	LOCAL PMG 3.8	16
2	28	2	52	48			33			4.11	4.80	LOCAL NNA 5.4	8
2	28	6	15	10	38.2N	141.7E	61		3.8	4.98	4.50	S HONSHU COAST	19
2	28	13	1	8	18.7S	169.5E	245					NEW HEBRIDES	14
2	28	14	39	17	14.3N	58.3W			5.0			LESSER ANTILLES	7
2	28	15	55	49			33			3.12	4.20	LOCAL PMG 4.4	16
2	28	17	47	49			33			3.71	4.60	LOCAL ARE 5.5	8
2	28	17	48	23	4.4S	139.0E	37		5.6	4.81	5.00	NEW GUINEA	16

MO	DA	HR	MIN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REC
3	1		25	57	36.8N	119.3W	16		4.0	2.96	3.96	C CALIFORNIA	3
3	1	1	13	27			33			4.15	4.70	LOCAL ARI 8.8	8
3	1	2	36	27			33			4.49	4.99	LOCAL MAN 3.6	22
3	1	3	20	2	35.7N	59.9E	33		4.8	3.98	3.80	N I IRAN	29
3	1	4	2	34	15.6N	93.1W	33		4.3	4.69	4.43	CHIAPAS MEXICO	5
3	1	6	39	34	18.2N	177.9W	568	4.9	4.6	4.16	4.40	FJOT IS	12
3	1	6	45	48	68.3N	31.6E						NW USSR BEAST	12
3	1	9	25	55	46.1N	153.1E	33		5.2			KURILE IS	19
3	1	9	30	43	35.8N	23.1E	156			4.80	4.50	S OF GREECE	20
3	1	10	45	56	61.2N	142.9E	61		5.1	5.53	4.85	S OF HOKKAIDO	19
3	1	11	55	23	61.9N	80.8E	33					LINKIANG	27
3	1	14	32	20	42.2N	141.2E	33		4.5	4.99	4.45	S HOKKAIDO BEAST	19
3	1	19	14	13	1.4N	29.6W	33			4.98	4.45	ATLANTIC OCEAN	32
3	1	23	3	31	22.9N	144.2E	77		4.4	4.05	3.80	VOLCANO IS	18
3	2		20	32	5.1S	144.3E	89		5.0	4.77	5.40	NL NEW GUINEA	15
3	2	1	34	41	6.5S	131.4E	33		4.4	2.75	4.70	BANDA SEA	23
3	2	2	45	37	23.8N	92.2E	36		4.2			L PAKISTAN	26
3	2	5	39		1.9S	143.6E	129		5.3	4.67	4.70	N OF NEW GUINEA	15
3	2	6	41	44			33			3.11	4.50	LOCAL MAG 1.8	22
3	2	6	47	18			33			3.15	4.45	LUZON PI	22
3	2	8	44	59	15.4S	172.9W	65		4.5			TONGA IS	12
3	2	9	25	55	66.1N	154.1E	33	5.4	5.2	4.19	4.58	KURILE IS	19
3	2	11	12	1	46.0N	153.0E	33		4.3	4.54	4.33	KURILE IS	19
3	2	15	43	3	11.0N	61.4W			5.1			LESSER ANTILLES	7
3	2	16	5		48.1N	152.9E	140		4.5			KURILE IS	19
3	2	16	6	56	17.1N	125.1E	92		4.0	4.68	4.32	MINDANAO PI	22
3	2	17	27	38	10.2N	125.4E	67		3.9	4.51	4.55	MINDANAO PI	22
3	2	19	41	58	6.8N	73.0W	173		4.1	4.77	4.60	COLOMBIA	7
3	2	20	11	41			33			3.32	4.70	LOCAL PMG 3.7	16
3	2	21	50	35	7.1S	128.5E	47			5.99	5.40	BANDA SEA	24
3	2	22	9	17	14.8N	94.0W	33		4.1	3.82	3.75	OFF CHIAPAS COAST	5
3	2	22	16	35	17.1S	175.0W	240		5.1	4.97	4.60	TONGA IS	12
3	3	1	48	9	36.7N	71.4E	209		4.3	5.25	4.90	HINDU KUSH	48
3	3	2	8	15	28.4S	69.0W	110		4.3	3.77	4.20	N CHILL	8
3	3	6		43			33			3.64	4.15	LOCAL ARI 4.0	8
3	3	7	54	15			33			3.87	4.10	LOCAL PMG 4.4	16
3	3	9	39	56	54.5N	164.9W	103		3.8	3.85	3.75	UNIMAK IS	1
3	3	17	5	4	36.4N	71.3E	155			4.08	4.05	HINDU KUSH	48
3	3	17	32	13	35.7N	90.1W	18		4.5	4.82	4.61	SE MISSOURI	34
3	3	18	36	14	3.0N	67.1E	33			5.47	5.30	MALDIVE IS	33
3	3	22	59	45	30.7N	136.9E	491		4.6	5.67	4.98	S OF HONSHU	18
3	4	1	40	2			33			3.23	4.50	LOCAL CHG 6.7	25
3	4	5	8	30	16.1S	178.5E	73		4.8	4.77	4.10	FJOT IS	12
3	4	7	41	51	82.9N	7.7W	33		5.0	5.15	4.79	N POLAR REGION	40
3	4	12	37	45	47.7N	152.5E	140		4.3	5.00	4.60	KURILE IS	19
3	4	12	50	16	46.3N	153.1E	33		4.3	4.59	4.25	KURILE IS	19
3	4	13	38	41	24.2N	121.7E	33		4.8	5.92	5.15	FORMOSA	21
3	4	15	10	19	35.2N	25.4E	42	5.3	4.8	5.23	4.95	CRETE	36
3	4	15	43	4	4.5S	81.6W	33		5.4	6.15	5.37	OFF N PERU COAST	8
3	4	18	31	52	15.7S	75.3W	45		4.9	4.55	4.72	NEAR COAST OF S PERU	8
3	4	19	4	3	19.3S	169.3E	43		5.1	4.90	4.77	NEW HEBRIDES IS	14
3	5	1	30	39	42.5N	111.3W	33			1.66	2.90	SE IDAHO	34
3	5	1	58	32	34.8N	5.4W	33			3.05	3.80	N MORRUCO	31
3	5	2	35	8	29.2N	81.2E	33			5.57	4.80	NEPAL	26
3	5	2	48	30	11.0N	90.4W	33		4.1	4.57	4.40	S OF GUATEMALA	5
3	5	4	54	51	11.8N	143.6E	33		4.9	4.10	4.10	MARIANA IS	18
3	5	5	51	15	68.4N	31.6E						NW USSR BEAST	
3	5	7	5	2	4.8S	81.5W	33		5.6	3.16	3.67	OFF N PERU COAST	8
3	5	7	53	39	36.1N	26.2E	77			3.78	4.10	ADRIAN SEA	30
3	5	9	12	17	17.5S	178.6W	512		4.6	4.73	4.62	FJOT IS	13

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	ML	LOCATION	REG
3	5	13	7	57	27.0N	140.0E	504		3.8	4.59	4.15	BONIN IS	18
3	5	15	8	2			33			4.83	5.50	LOCAL LPH 7.0	8
3	5	15	40	25			33			3.32	4.10	LUZON PI	22
3	5	19	5	39	6.4S	149.0E	60		4.4	3.81	4.46	NEW BRITAIN	15
3	5	19	32	43	45.0N	146.1E	33			4.79	4.40	KURILE IS	19
3	5	23	27	40	6.3S	149.1E	19		4.1	4.30	4.63	NEW BRITAIN	15
3	6	3	22	10			33			3.15	3.40	LOCAL LPH 4.0	8
3	6	4	37	44	28.9N	132.2E	55		4.4	4.93	4.60	RYUKYU IS	20
3	6	6	55	44	53.8N	161.2E	33		4.1	4.73	4.25	L KAMCHATKA COAST	19
3	6	8	35	4	33.8N	72.6E	35		4.3	4.99	4.50	W PAKISTAN	47
3	6	16	59	11	68.8N	30.4E						NW USSR BLAST	40
3	6	17	53	26	11.4S	166.5E	195		4.6	4.71	4.50	SANTA CRUZ IS	39
3	6	18	7	45			33			3.44	4.30	LOCAL PMG 3.7	16
3	6	19	15	38			33			3.20	4.50	LOCAL ARL 4.6	8
3	6	19	50	8	9.8S	155.2E	60		5.1	4.49	4.77	SOLOMON IS	15
3	6	23	23	3	37.0N	140.8E	71		4.1	3.86	3.70	E HONSHU COAST	19
3	7	1	50	30	3.9S	131.1E	33			5.43	5.03	CERAM	16
3	7	3	40	47	15.1S	168.2E	33		4.6	5.73	4.96	NEW HEBRIDES	14
3	7	4	27	2	61.7N	4.8E						W NORWAY COAST	40
3	7	5	14	12	44.4N	152.1E	33		3.9	5.45	5.30	KURILE IS	19
3	7	5	22	1	27.0S	113.5W	33	6.7	5.6	6.23	4.97	W OF EASTER IS	43
3	7	11	41	30	27.3S	113.0W	33		4.9	6.38	5.20	EASTER IS	43
3	7	12	16	28	44.3S	75.3W	45		5.6	6.43	5.22	NEAR S CHILE COAST	9
3	7	13	2	59	6.0S	148.6E	59		4.2	3.68	4.75	NEW BRITAIN	15
3	7	13	43	1	50.8N	178.6E	33		4.1	5.50	4.58	RAT IS	1
3	7	15	5	16			33			4.22	4.20	LOCAL BAG 3.7	22
3	7	21	49	33	36.1N	71.2E	202			5.12	4.56	HINDU KUSH	48
3	7	23	53	26	44.8N	123.4W	33		4.6	3.86	4.05	NW OREGON	3
3	8		14	15	76.8N	94.7W	33		4.5	5.01	5.15	QUEEN ELIZABETH IS	42
3	8	2	44	31	19.2S	169.7E	33		5.3	5.52	5.10	NEW HEBRIDES IS	14
3	8	3	17	52	14.9S	167.4E						NEW HEBRIDES	14
3	8	3	24	57	19.2S	169.6E	49		4.8	5.66	4.85	NEW HEBRIDES	14
3	8	3	33	3	19.3S	169.6E	33			6.05	5.40	NEW HEBRIDES IS	14
3	8	8	35	49	44.8N	110.3W	33		3.8		3.20	YELLOWSTONE PARK	34
3	8	8	37	41			33			3.74	4.90	LOCAL PMG 3.7	16
3	8	13	59	40	21.8S	176.5W	137		4.6	5.02	4.80	TONGA IS	12
3	8	15	6	5	1.1N	29.9W	33		5.2	5.82	5.21	MID-ATLANTIC	32
3	8	16	4	54	21.3S	170.2E	108		5.0	5.29	4.72	LOYALTY IS	14
3	8	22	26	26	9.0N	84.1W	33			5.15	4.50	W COSTA RICA COAST	6
3	9	2	17	40	21.9N	62.0E	33		5.1	5.61	5.14	ARABIAN SEA	29
3	9	2	48	28	27.1S	177.1W	33					KERMADEC IS	12
3	9	4	21	25	2.5N	89.5W	33		4.3	4.26	4.35	GALAPAGOS IS	43
3	9	5	26	58	8.9N	126.3E	87		4.3	4.81	4.60	NEAR MINDANAO COAST	22
3	9	6	44	28	46.1N	141.0E	31		4.8	5.30	4.72	KURILE IS	19
3	9	13	6	15	19.1S	169.4E	33		4.9	4.70	4.50	NEW HEBRIDES IS	14
3	9	16	23	44	3.2S	147.0E	33		4.8	5.18	4.87	BISMARCK SEA	16
3	9	16	56	13	6.7N	123.9E	33		4.5	5.07	4.90	NEAR S MINDANAO COAST	22
3	9	18	55	49	3.2S	147.1E	33		4.9	4.69	4.51	NEW BRITAIN REGION	15
3	9	19	13	53	19.1S	169.6E	33		4.8	4.81	4.36	NEW HEBRIDES IS	14
3	9	19	21	45			33			4.22	5.20	LOCAL PMG 8.3	16
3	9	22	43	50	21.5S	179.0W	529		4.4	5.37	4.97	FIJI IS	13
3	10	1	19	38	15.2S	167.2E	142		4.9	6.04	5.28	NEW HEBRIDES IS	14
3	10	1	26	4	56.2N	153.8W	33		5.1	5.82	5.16	KODIAK IS	1
3	10	2	53	33	24.7N	122.1E	33		4.9	5.95	4.95	NEAR E FORMOSA COAST	21
3	10	4	25	11	48.5N	157.1E	33		4.1	4.23	3.70	KURILE IS	19
3	10	6	4	33	14.2N	89.5W	33		4.3			EL SALVADOR	5
3	10	8	25	52	54.5N	159.1E	33		4.7	4.87	4.30	KAMCHATKA	19
3	10	9	39	10	16.0S	168.4E	283		4.5	4.86	4.60	NEW HEBRIDES REGION	14
3	10	10	51	48	29.9S	71.2W	70	6.1	5.8	5.81	5.24	NEAR C CHILE COAST	8
3	10	11	26	3	44.9N	110.3W	33					YELLOWSTONE PARK	34

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
3	10	11	40	29	38.4N	127.2W	33					N CALIF COAST	3
3	10	11	50	26	39.4N	141.7E	60	4.6	4.84	4.45		NEAR HONSHU COAST	19
3	10	13	16	56	45.4N	109.4W	33					S MONTANA	34
3	10	13	51	4	2.4N	126.6E	41			5.42	5.00	CELEBES SEA	23
3	11	3	27	6	17.1S	178.8W	540			5.32	5.10	FIJI IS	13
3	11	4	15	8			33			3.53	3.70	LOCAL PMG 3.4	16
3	11	5	8	23	68.5N	29.3E						NW USSR BLAST	40
3	11	7	27	22	38.1N	29.3E	33	5.5	5.96	5.19		TURKEY	30
3	11	9	2	20	18.7S	177.6W	402	4.8	5.03	4.89		FIJI IS	13
3	11	9	42	51		130.4E	33	4.7	4.57	4.20		HALMAHERA REGION	23
3	11	10	27	42	36.7N	71.1E	189	5.0	5.01	4.40		HINDU KUSH	48
3	11	11	30	16	5.1N	76.4W	95	4.3	4.05	4.55		CENTRAL COLOMBIA	6
3	11	14	27	8	31.1N	138.2E	396	4.1	4.68	4.30		S OF HONSHU JAPAN	19
3	11	15	30	8	17.6N	100.8W	33	4.8	4.40	4.07		GUERRERO MEXICO	5
3	11	21	5	49	13.7S	165.8E	33	4.7	4.73	4.33		NEW HEBRIDES IS	14
3	11	23	41	22	45.3N	109.6W	33					S MONTANA	34
3	12	8	5	40	53.9N	160.6E	33	4.7	5.35	4.68		KAMCHATKA	19
3	12	9	32	33	16.9N	60.9W		4.5				LESSER ANTILLES	7
3	12	12	38	54	39.3N	40.3E	70	4.0	4.48	4.30		TURKEY	30
3	12	13	21	39	16.0S	172.6W	33	5.3	2.93	4.30		TONGA IS	12
3	12	15	18		71.7N	1.4W	33	3.9	3.27	4.30		JAN MAYEN IS	40
3	12	16	29	40			33					LOCAL NNA 2.3	8
3	12	19	35	48			33			3.32	4.00	LOCAL IST 3.7	30
3	12	20	15		16.2S	167.7E	33	4.9	5.30	5.02		NEW HEBRIDES IS	14
3	12	20	40	13	7.1S	156.0E	97	5.2	5.51	5.10		SOLOMON IS	15
3	12	23	47	26	39.5N	110.7W	33			1.80	3.60	E UTAH	34
3	13	3	48	14	11.7S	160.9E	126	4.4	4.70	4.70		SOLOMON IS	15
3	13	10	39	19	19.5N	69.5W	33	4.1	4.99	4.76		DOMINICAN REPUBLIC	7
3	13	10	54	16	33.1N	141.4E	47	4.1	4.30	4.10		OFF S HONSHU COAST	18
3	13	17	27	23	36.1N	70.4E	190	4.0				HINDU KUSH	48
3	14	1	57	29	25.6S	137.6E	33			4.59	4.85	AUSTRALIA	38
3	14	8	16		19.0N	120.4E	51	5.0	5.10	4.78		N LUZON PI	22
3	14	18	13	19	53.0N	164.5W	33	4.6	5.08	4.50		FOX IS	1
3	14	18	30	41	46.5N	153.4E	32	4.7	5.19	4.70		KURILE IS	19
3	14	23	15	23	5.9S	144.6E	33	4.3	4.73	4.50		E NEW GUINEA	16
3	15	4	1		5.0S	129.6E	295	4.8	5.73	4.88		BANDA SEA	23
3	15	16	1		8.4N	126.4E	117	5.0	6.13	5.12		MINDANAO PI	22
3	15	3	34	55	24.7S	180.0E	573	4.2	5.38	5.10		FIJI IS	13
3	15	4	3	5	25.0S	179.6E	563					FIJI IS	12
3	15	4	15	4	13.1S	172.2W	43					SAMOA IS	12
3	15	5	41	36	15.9N	60.8W	100	4.8				LESSER ANTILLES	7
3	15	5	46	33	21.7N	45.4W	33	4.9	5.55	5.06		N ATLANTIC OCEAN	32
3	15	10	54		17.5N	119.8E	33	4.4	5.28	4.88		W LUZON PI	22
3	15	15	58				33			3.15	4.50	LOCAL PMG 6.1	16
3	15	18	50	35	42.3N	142.3E	33	4.0	5.58	4.90		S HOKKAIDO JAPAN	19
3	16	3	35	22	26.1N	92.8E	48	4.5	4.95	4.77		ASSAM INDIA	26
3	16	8	44	48	46.5N	154.7E	26	7.2	6.2	6.97	5.65	KURILE IS	19
3	16	13	18	18	20.8S	174.1W	33	4.4	5.15	4.86		TONGA IS	12
3	16	21	40	9	20.7S	174.6W	33	5.0	5.54	5.12		TONGA IS	12
3	16	22	28	57	38.9N	71.8E	73	5.0	6.07	5.46		TADZHIK SSR	48
3	17	4	52	3	67.5N	31.8E						NW USSR BLAST	40
3	17	6	18	52	7.1N	82.2W	53	4.6	4.27	4.52		S OF PANAMA	6
3	17	8	42	12	46.0N	155.0E	35	4.7	4.55	4.20		KURILE IS	19
3	17	10	32	20	37.4S	78.2E	33					INDIAN OCEAN	33
3	17	11	11	36	39.2N	111.9W	33					UTAH	34
3	17	13	8	55	46.2N	155.6E	33					KURILE IS	19
3	17	14	17	26	39.5N	21.5E	78	4.8	4.61	4.56		GREECE	30
3	17	19	38	20	64.9N	174.9W	33			3.32	3.40	E SIBERIA	42
3	17	22	10	36	44.8N	110.3W	33					YELLOWSTONE PARK	34
3	18	3	47	58			33			3.33	3.80	LOCAL PMG 3.5	16

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
3	18	4	41		26.6S	176.7W	33		4.7	5.50	5.10	KERMADEC IS	12
3	18	4	25	41	33.2S	179.0E	33			6.35	5.20	KERMADEC IS	12
3	18	9	47	59	30.7N	42.1W	33		4.3	4.54	4.10	N ATLANTIC OCEAN	32
3	18	11	39	37	7.6S	120.2E	33			5.37	5.10	FLORES SEA	24
3	18	13	16	24	15.7S	178.4W	561		4.7	4.25	4.50	FIJI IS	13
3	19		6		17.9N	61.3W			4.4			LESSER ANTILLES	7
3	19	4	52	35	79.1N	2.0E	33			4.16	4.10	ARTIC OCEAN	40
3	19	5	11	8	18.9N	145.3E	220		4.0	4.98	4.51	MARIANA IS	18
3	19	5	46	50	22.8S	170.5E	67		4.6	5.04	4.65	LOYALTY IS	14
3	19	13	13	22	22.6S	170.6E	49		4.5	4.57	4.53	LOYALTY IS	14
3	19	14	13	18	27.0N	115.0W	33		4.1	2.71	4.20	BAJA CALIF	4
3	19	14	42	1	22.6S	170.8E	33		4.8	4.87	4.70	LOYALTY IS	14
3	19	17	19	24	7.7S	106.9E	94					S JAVA	24
3	19	18	11	32	2.1S	127.3E	33			4.57	4.60	BANDA SEA	23
3	19	19	8	8	8.3N	126.6E	109		4.2	4.75	4.83	NEAR E MINDANAO COAST	22
3	19	23	56	11	5.4S	152.1E	65			3.06	3.55	NEW BRITAIN	15
3	20	4	43	14	19.9S	179.1W	680		5.2	5.70	5.06	FIJI IS	13
3	20	4	45	50	19.6S	179.3W	680		5.2	5.29	5.23	FIJI IS	13
3	20	4	52	38			33			3.20	4.50	LOCAL ARE 2.7	8
3	20	5	23	24	68.3N	31.6E						NW USSR BLAST	40
3	20	7	4	18	46.4N	154.5E	16		5.2	5.59	4.98	KURILE IS	19
3	20	10	44	41	15.8S	171.7W	33		4.6	4.27	4.53	SAMOA IS	12
3	20	11	38	33	44.9N	110.7W	33		4.1	2.51	4.10	YELLOWSTONE PARK	34
3	20	12	32	26	44.6N	110.5W	33		4.0	2.54	4.10	YELLOWSTONE PARK	34
3	20	14	38	57	6.7S	129.9E	222			4.65	4.55	BANDA SEA	24
3	20	14	41	48	11.9N	93.1E	33		4.4	5.91	5.20	ANDAMAN IS	24
3	20	16	38	56	2.4S	138.4E	40		5.5	5.83	5.26	W NEW GUINEA	16
3	20	23	15	2			33			3.35	3.60	LOCAL GSC 4.8	3
3	21	1	12	55	19.3S	175.8W	130		4.6	4.20	4.75	TONGA IS	12
3	21	3	00	24	44.8N	110.6W	33					YELLOWSTONE PARK	34
3	21	4	11		36.5N	140.9E	50		5.2	5.72	5.14	NEAR E HONSHU COAST	19
3	21	4	33	53	5.5S	152.2E	33		4.8	4.12	4.95	NEW BRITAIN	15
3	21	8	1	8						3.07	4.40	LOCAL BAG 1.7	22
3	21	8	54	43			33			4.36	4.20	LOCAL BAG 5.6	22
3	21	14	56	16			33			3.77	4.40	LOCAL MAN 4.0	22
3	21	16	9	48	44.9N	110.7W	33					YELLOWSTONE PARK	34
3	21	17	53	16	46.6N	154.9E	33		3.7	4.23	4.10	KURILE IS	19
3	21	18	19	23	50.6N	129.4W	33		4.0	3.95	3.86	VANCOUVER IS	2
3	21	23	35	55	47.0N	155.6E	69		4.9	4.60	4.20	KURILE IS	19
3	21	1	44	26	19.3N	67.0W	39		4.3			MONA PASSAGE	7
3	22	2	38	50	36.7N	139.5E	83		4.3	4.80	4.40	HONSHU JAPAN	19
3	22	3	57	24	46.0N	148.4E	115		4.9	5.32	4.72	KURILE IS	19
3	22	4	34	43	44.7N	110.7W	33		4.1	3.01	3.60	YELLOWSTONE PARK	34
3	22	5	58	51	44.9N	109.8W	33					N WYOMING	34
3	22	10	35	50			33			3.64	3.60	LOCAL GSC 5.1	3
3	22	11	56	44	15.2S	168.4E	33		4.2	4.18	4.25	NEW HEBRIDES IS	14
3	22	21	18	27	22.7S	68.0W	242					CHILE-BOLIVIA	8
3	22	21	14	44	17.5N	61.5W	50		4.7			LESSER ANTILLES	7
3	22	22	28	43	34.8N	33.0E	33			4.38	4.40	CYPRUS	30
3	22	23	35	20	34.2N	32.2E	33					CYPRUS	30
3	22	23	36	19	52.7S	137.4E	33			5.01	5.15	SW OF TASMANIA	45
3	23	1	10	46	25.3S	179.2E	560		5.3	4.72	4.93	FIJI IS	13
3	23	3	21	18	16.9N	61.1W	25		4.5			LESSER ANTILLES	7
3	23	3	22	55	16.6N	61.4W	60		4.1			LESSER ANTILLES	7
3	23	5	22	15	68.3N	31.6E						NW USSR BLAST	40
3	23	5	48	35	42.3N	84.3E	33			4.58	4.80	SINKIANG CHINA	27
3	23	7	57	35	10.2S	70.9W	580				3.41	PERU-BRAZIL	8
3	23	8	51	44	4.9S	145.7E	51		4.6	3.97	4.35	NEAR NEW GUINEA COAST	16
3	23	12	21	43	45.0N	111.4W	34					HEGBEN LAKE	34
3	23	14	04	49	71.0N	5.0W						JAN MAYEN IS	40

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
3	23	14	28	55	6.5S	147.9E	33			3.46	4.43	NEW GUINEA COAST	16
3	23	21	11	26	10.0S	113.8E	139		4.8	3.78	3.90	SE JAVA COAST	24
3	23	21	23		2.4S	133.6E	130		4.4	5.03	4.60	W NEW GUINEA	16
3	23	22	51	35	67.0N	14.1E						W NORWAY COAST	40
3	24	1	36	22	5.8S	151.0E	33		4.8	4.74	5.00	NEW BRITAIN	15
3	24	2	7	13	7.7S	120.4E	33		5.4	6.39	5.50	SUMBA IS	24
3	24	2	24	49	51.6N	173.3W	55		4.7	4.71	4.20	ANDREANOF IS	1
3	24	2	34	10	18.7N	64.5W	50		5.3			LESSER ANTILLES	7
3	24	8	19	24	22.6S	170.8E	33					LOYALTY IS	14
3	24	9	31	50	3.2S	146.8E	33		5.0	4.99	5.50	BISMARCK SEA	16
3	24	6	8	44	67.0N	14.1E						W NORWAY COAST	40
3	24	9	43	20	9.0N	125.6E	51		5.2	6.75	5.74	MINDANAO PI	22
3	24	10	58	56	36.4N	70.8E	222		4.1			HINDU KUSH	48
3	24	12	4	13	44.8N	141.9E	195		4.1			N HOKKAIDO COAST	19
3	24	12	44	3	34.4N	47.9E	33	5.6	5.2	5.78	5.17	W IRAN	29
3	24	18	20	53	14.9S	176.0W	320		4.4	3.99	4.20	FIJI IS	13
3	24	20	20	43	13.6S	172.8W	74		4.0			SAMOA IS	12
3	24	20	30	56	17.0N	99.6W	33		3.6			MEXICO COAST	5
3	24	21	35	24	51.8N	178.1W	57	5.5	5.5	5.98	5.31	ANDREANOF IS	1
3	25	2	39	48	52.2N	171.2W	44		3.4	4.38	4.00	ALEUTIAN IS	1
3	25	3	55	1	14.0N	121.9E	33			4.98	4.52	S LUZON PI	22
3	25	5	52	21	68.5N	29.3E						NW USSR BLAST	40
3	25	8	8	57	16.3N	119.7E	36		4.7	4.94	4.80	NEAR W LUZON COAST	22
3	25	9	28	44	36.0N	114.9W	17		4.3	4.05	4.15	S NEVADA	34
3	25	12	53	5	10.6S	120.4E	33		5.6	5.72	5.30	NEAR S SUMBAWA COAST	24
3	25	17	43	55	45.0N	111.3W	33					SW MONTANA	34
3	25	18	33	46			33			3.36	3.60	LOCAL ARE 3.5	8
3	25	19	48	10	51.4N	178.8W	104		4.2	4.66	4.10	ANDREANOF IS	1
3	25	20	17	4	56.3S	149.9E	39		5.0	5.54	5.20	MACQUARIE IS	45
3	25	22	46	16	.7N	166.5E	30		5.6	6.23	5.35	OFF SW SUMATRA COAST	24
3	26	8	23	52	15.0S	171.3W	33		4.6	4.72	4.70	SAMOA IS	12
3	26	8	50	45	4.2S	152.6E	120		5.1	5.41	5.00	NW IRELAND	15
3	26	9	48	20	29.7S	177.8W	45			7.22	5.55	KERMADEC IS	12
3	26	11	46	2	30.1S	177.4W	50		5.0	5.71	5.07	KERMADEC IS	12
3	26	12	51	39	29.7S	177.5W	60		4.9	5.72	4.76	KERMADEC IS	12
3	26	13	25	3	29.8S	177.9W	42	6.7	5.9	6.74	5.49	KERMADEC IS	12
3	26	14	34	16	18.0S	168.0E	32		4.9	5.82	5.33	NEW HEBRIDES IS	14
3	26	18	23	8	51.3N	178.8E	50		4.4	4.89	4.40	RAT IS	1
3	26	19	47	46	44.4N	146.7E	110	6.2	5.6	5.76	5.11	KURILE IS	19
3	26	21	34	41	36.0N	135.7E	33	6.4	5.9	6.54	5.66	NEAR E HONSHU COAST	19
3	26	22	36	48	34.0N	139.8E	100		4.5	4.66	4.21	OFF S HONSHU COAST	19
3	26	23	52	5	7.0S	129.0E	235			4.99	4.65	BANDA SEA	24
3	27	2	31	52	6.8N	73.8W	33			4.62	5.20	COLOMBIA	7
3	27	3	38				33			4.80	5.50	LOCAL ARE 6.4	8
3	27	3	39	5	37.0N	71.9E	189			4.69	4.40	HINDU KUSH	48
3	27	5	12	7	44.5N	145.6E	33		4.2			KURILE IS	19
3	27	6	49	23	35.6N	135.8E	33		4.1	5.31	4.85	HONSHU JAPAN	19
3	27	7	22	9	44.3N	110.6W	33		4.2	2.58	4.10	YELLOWSTONE PARK	34
3	27	9	11	44	51.1N	130.1W	33		3.5	4.04	3.85	QUEEN CHARLOTTE IS	2
3	27	11	24	12	57.3N	12.0E						W SWEDEN COAST	36
3	27	11	37	30	57.3N	12.0E						W SWEDEN COAST	36
3	27	11	55	29	57.3N	12.0E						W SWEDEN COAST	36
3	27	12	31	52	6.8N	73.0W	176		4.6	4.37	4.50	COLOMBIA	7
3	27	12	19	19	57.1N	12.0E						W SWEDEN COAST	36
3	27	13	15	30	6.3N	73.1W	147		5.0	3.98	4.60	COLOMBIA	7
3	27	15	15	43	45.3N	109.8W	33					S MONTANA	34
3	27	21	19	1	51.4N	179.1W	33		4.2	4.27	4.00	ANDREANOF IS	1
3	28		15	48	66.4N	19.5W	15	6.7	5.6	6.34	5.23	ICELAND	40
3	28		26	27	66.3N	20.2W	33		4.8	4.41	4.40	ICELAND	40

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
3	28		59	39	66.4N	19.5W	33		4.7	4.87	4.26	ICELAND	40
3	28	1	28	39	66.6N	20.0W	33					ICELAND	40
3	28	1	31	16	16.0S	131.9E	33			4.98	4.90	N AUSTRALIA	38
3	28	2	4	26	51.9N	156.5E	147		4.3			S KAMCHATKA	19
3	28	6	27	16	40.9S	84.2W	33		4.5			CHILE COAST	9
3	28	8	16	35	18.0N	61.2W			5.0			LESSER ANTILLES	7
3	28	9	47	10	49.0N	154.9E	53		4.9	5.46	4.82	KURILE IS	19
3	28	11	12	31	30.2S	177.8W	38		5.6	6.26	5.40	KERMADEC IS	12
3	28	15	12	3	10.2N	126.2E	60		4.4	5.40	4.96	NEAR N MINDANAO COAST	22
3	28	16	18	41	19.9S	178.7W	568		4.6	4.35	4.50	FIJI IS	12
3	28	17	12	23	30.8N	70.0E	24			3.88	3.75	W PAKISTAN	48
3	28	19	54	30			33			3.88	4.30	LOCAL BAG 1.5	22
3	28	21	58	17	18.2N	61.0W			4.8			LESSER ANTILLES	7
3	28	23	29	15	29.6S	177.5W	54		5.1	5.80	5.13	KERMADEC IS	12
3	29		23	32	55.4N	166.0E	33		4.1	5.52	5.00	KOMANDORSKIE IS	1
3	29	1	40	13	28.2S	177.9W	33					KERMADEC	12
3	29	3	9	11	40.4N	26.6E	33		4.4	4.65	4.25	NW TURKEY	30
3	29	5	12	22	13.8N	91.8W	33		4.5	4.58	4.30	GUATEMALA	5
3	29	6	5	20	10.3S	160.7E	32		5.0	4.43	4.45	SOLOMON IS	15
3	29	6	32	25	35.6N	140.5E	33		4.2			CENTRAL HONSHU	19
3	29	7	47	56	13.4N	91.0W	33		4.3	3.64	3.70	GUATEMALA	5
3	29	8	17	22	18.3N	61.0W	25		4.3			LESSER ANTILLES	7
3	29	17	3	45	17.3N	60.5W	25		4.4			LESSER ANTILLES	7
3	29	20	4	52	36.5N	70.4E	200		4.2	4.15	3.90	HINDU KUSH	48
3	29	21	16	44	30.2S	177.7W	60		5.0	5.55	4.96	KERMADEC IS	12
3	29	21	52	8	35.6N	28.6E	33			3.90	4.30	DODECANESE IS	30
3	29	23	30	43	18.0S	168.5E	35					NEW HEBRIDES	14
3	30		34	40	51.1N	129.4W	33		4.2	4.44	4.04	QUEEN CHARLOTTE IS	2
3	30	1	53	28	19.1S	169.1E	160		6.1	6.82	5.91	NEW HEBRIDES	14
3	30	6	55		51.8N	170.5W	33			4.22	4.25	FOX IS	1
3	30	9	23	11	1.2S	77.8W	105		4.5	4.86	4.50	ECUADOR	8
3	30	11	37	28	30.1S	176.9W	33			6.15	5.15	KERMADEC IS	12
3	30	16	12	1	4.8S	75.1W	244		3.9	4.02	3.85	N PERU	8
3	30	16	51	57	44.2N	148.0E	33	5.4	6.3	6.58	5.67	KURILE IS	19
3	30	17	30	4	38.6N	75.8E	33		4.3	5.19	4.60	SINKIANG CHINA	48
3	30	21	13	54	8.7S	109.2W	33		4.6	5.15	4.70	SW GALAPAGOS IS	44
3	31	2	9	13	18.0N	61.9W	150		5.0			LESSER ANTILLES	7
3	31	2	15	11	17.8N	60.9W	50		4.9			LESSER ANTILLES	7
3	31	2	27	9	36.9N	57.7E	33		4.6	4.86	4.65	NE IRAN	29
3	31	3	35	21			33			3.51	4.30	LOCAL ARE 6.1	8
3	31	4	46	1	6.5S	81.1W	33		5.2	5.95	5.17	S PERU COAST	8
3	31	4	57	46	67.5N	31.9E						NW USSR BLAST	40
3	31	5	30	49	29.9S	177.7W	48	6.3	5.7	6.36	5.41	KERMADEC IS	12
3	31	5	51	1	10.7S	78.5W	33		5.0	5.17	4.76	PERU COAST	8
3	31	6	51	23	67.3N	31.0E						NW USSR BLAST	40
3	31	7	7	36	6.1S	149.0E	60	6.1	5.7	6.04	5.45	NEW BRITAIN	16
3	31	7	56	41			33			3.31	3.30	LOCAL BAG 2.2	22
3	31	8	12	40	29.7S	176.9W	60		4.2	4.88	4.23	KERMADEC IS	12
3	31	9	7	20	30.1S	177.7W	48		5.2	5.79	5.23	KERMADEC IS	12
3	31	12	26	12	35.8N	132.6E	33		4.7	4.97	4.47	NEAR S HONSHU COAST	20
3	31	14	58	2	35.1N	9.3W	33			4.67	4.25	OFF MOROCCO COAST	31
3	31	15	2	27	34.9N	133.0E	60		4.4	5.12	4.40	HONSHU JAPAN	19
3	31	15	33	25	53.1N	167.2W	33		4.3	5.18	4.62	FOX IS	1
3	31	17	28	53	.8N	96.6E	33			5.94	5.23	W OF SUMATRA	24
3	31	19	22	53	30.0S	178.0W	50	6.4	5.8	6.76	5.53	KERMADEC IS	12



MJ	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	1	1	25	10	28.8S	67.5W	33			3.36	4.60	ARGENTINA	8
4	1	2	19	57	6.0S	149.0E	64		4.8	5.25	5.26	NEW BRITAIN	15
4	1	3	51	48	13.0S	167.1E	215		4.5	4.54	4.50	SANTA CRUZ IS	39
4	1	4	28	44	44.8N	141.1E	255			5.83	5.13	OFF W HOKKAIDO COAST	19
4	1	6	4	57			33			3.14	4.40	LOCAL NNA 4.6	8
4	1	8	30	35	29.2S	176.6W	38					KERMADEC IS	12
4	1	9	22	52	35.4N	69.8E	100		4.8	4.46	4.40	HINDU KUSH	48
4	1	11	17	2	28.8S	178.0W	33					KERMADEC IS	12
4	1	16	31	29	39.1N	77.5E	203		4.0	4.96	4.40	SINKIANG CHINA	27
4	1	18	36	26	36.5N	71.4E	244		4.3	4.53	4.57	HINDU KUSH	48
4	1	19	56	28	13.3S	167.1E	33		4.4			SANTA CRUZ IS	14
4	1	20	37	09	36.1N	114.8W	33				3.20	S NEVADA	34
4	1	22	30	51			33			3.54	3.90	LOCAL QUE 6.8	47
4	2		57	42	6.6N	73.2W	140		4.5	4.25	4.77	COLOMBIA	7
4	2	3	5	22	17.0N	61.3W	50		4.0			LESSER ANTILLES	7
4	2	3	26	35	17.0N	61.2W	50		3.8			LESSER ANTILLES	7
4	2	4	6	57	55.2N	160.3E	33		4.9	4.83	4.50	KAMCHATKA	19
4	2	3	33	6	31.0S	177.6W	33					KERMADEC IS	12
4	2	4	32	16			33			3.76	4.90	LOCAL ANT 5.1	8
4	2	4	43	31	29.7S	177.1W	51			5.10	5.02	KERMADEC IS	12
4	2	4	58	32	6.1S	149.1E	65					NEW BRITAIN	15
4	2	5	5	6	29.7S	177.0W	36					KERMADEC IS	12
4	2	5	20	48	31.1S	177.5W	33			5.53	4.70	KERMADEC IS	12
4	2	9	40	45	36.2N	114.9W	33					S NEVADA	3
4	2	11	25	25	30.1S	177.1W	48			6.03	5.00	KERMADEC IS	12
4	2	11	35	51	5.8S	105.0E	91			5.11	4.66	SUMATRA	24
4	2	11	42	56			33			3.70	4.40	LOCAL UUE 7.0	47
4	2	12	25	36			33			3.56	4.70	LOCAL MAN 3.9	22
4	2	13	40	13	44.8N	110.7W	33					YELLOWSTONE PARK	34
4	2	15	29	43	44.7N	110.5W	33					YELLOWSTONE PARK	34
4	2	16	18	56	53.2N	171.7W	142	5.2	5.7	6.23	5.39	ANDREANOF IS	1
4	2	17	16	19			33			4.23	4.50	LOCAL ANT 7.5	8
4	3	1	13	16	17.0N	46.5W	33		4.5	5.08	4.19	N ATLANTIC	32
4	3	1	21	54	14.7S	176.4W	33		4.5	4.97	4.36	FIJI IS	13
4	3	1	33	53	9.2S	123.9E	33		6.0	4.94	4.75	SAWU SEA	23
4	3	1	35	59	4.8S	78.4W	33			4.12	4.50	PERU-EQUADOR	8
4	3	2	9	37	16.7N	46.6W	33		4.5	5.09	4.55	ATLANTIC OCEAN	32
4	3	7	53		11.9S	167.2E	33		4.5	5.12	4.65	SANTA CRUZ IS	39
4	3	9	35	03	45.0N	107.9W	33					WYOMING-MONTANA	34
4	3	9	55	13	45.1N	109.8W	33		3.9			SW MONTANA	34
4	3	11	21	49	29.6S	177.2W	48		4.4	5.28	4.78	KERMADEC IS	12
4	3	11	44	57	8.2S	112.7E	163			5.01	4.65	JAVA	24
4	3	11	58	7	19.1N	121.4E	71		4.0	5.67	4.66	BAJUAYAN PI	22
4	3	14	47	56	55.4S	128.2W	33		5.8	5.94	5.00	PACIFIC OCEAN	43
4	3	15	18	36	6.1S	149.1E	61		4.9	4.80	5.10	NEW BRITAIN	16
4	3	15	54	52	61.1N	148.1W	78		5.7	5.14	4.51	ALASKA	1
4	3	17	33	26	15.9N	61.3W	175		4.3			LESSER ANTILLES	7
4	3	18	54	7	25.2S	179.5W	409			5.13	4.77	FIJI IS	13
4	3	19	00	38	14.4N	146.7E	33					MARIANA IS	18
4	4	6	7	15	3.3N	74.5W	31		4.2	5.63	4.60	COLOMBIA	7
4	4	8	26	33	15.3S	72.3W	122		4.6	4.31	4.55	S PERU	8
4	4	13	43	20	21.2N	119.5E	19		4.2	4.82	5.10	S OF FORMOSA	21
4	4	15	36	27	42.4N	111.2W	33				3.50	IDAHO	34
4	4	16	25	11	13.3N	61.1W	75		3.5			LESSER ANTILLES	7
4	4	18	25	44	30.2S	177.6W	20		4.3			KERMADEC IS	12
4	4	22	1	3	30.3S	177.8W	36		4.5	4.88	4.80	KERMADEC IS	12
4	4	23	27	51	30.2S	177.8W	33					KERMADEC IS	12
4	5		51	55	38.7N	142.0E	51		4.1	5.52	4.35	E HONSHU COAST	19
4	5	2	26	11	30.2S	177.7W	33		4.6	5.48	4.90	KERMADEC IS	12
4	5	6	49	43	1.6S	99.4E	33			5.46	5.16	OFF W COAST OF SUMATRA	24

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	5	10	50	3	30.1S	177.2W	44			4.75	4.50	KERMADEC IS	12
4	6		42	59	18.0S	69.9W	158	4.3	4.16	4.55		S PERU	8
4	6	2	35	19	1.7N	124.9E	38		4.68	5.00		CELEBES	23
4	6	2	51	46	5.1S	145.5E	57	4.8	5.06	4.83		NEW GUINEA	16
4	6	5	34	9	30.3S	177.0W	33		4.97	4.70		KERMADEC IS	12
4	6	7	3	6	17.5S	178.9W	526	5.1	5.75	5.12		FIJI IS REGION	13
4	6	7	51	4	36.4N	89.8W	18				3.30	SE MISSOURI	34
4	6	8	12	24	36.4N	89.7W	18				3.60	SE MISSOURI	34
4	6	9	46	52			33			3.21	4.50	LOCAL ATU 2.7	30
4	6	11	19	23	63.4N	149.5W	39	6.1	5.5	6.00	5.14	CENTRAL ALASKA	1
4	6	12	7	10	63.6N	149.5W	55	4.5	5.16	4.50		CENTRAL ALASKA	1
4	6	15	9	44	30.2S	177.9W	33					KERMADEC IS	12
4	6	16	26	7	41.6N	141.7E	80	4.7	5.47	4.75		S HOKKAIDO COAST	19
4	6	17	48	53	33.6N	82.8E	33		5.15	4.80		TIBET	27
4	6	18	2	31	32.1S	178.1E	197	4.6	5.12	4.75		KERMADEC IS	12
4	6	18	29	56	19.6N	64.3W		5.1				LESSER ANTILLES	7
4	6	20	18	19	40.7N	128.3W	33	4.2	3.61	4.80		OFF N CALIF COAST	3
4	6	21	35	21	6.0S	149.9E	49		5.16	5.10		NEW BRITAIN	16
4	6	23	36	36	7.2S	132.6E	33		4.56	4.45		TANIMBAR IS	24
4	6	23	40	21	20.0N	109.3W	44	4.3	4.63	4.58		OFF W COAST OF MEXICO	5
4	7	2	15	9			33		3.13	4.40		LOCAL MAN 1.3	22
4	7	3	57	32	24.5S	177.0W	114	4.7	5.85	5.13		TONGA IS	12
4	7	7	20	53	31.2N	41.6W	30					N ATLANTIC	32
4	7	8	44	40			33			3.66	4.40	LOCAL QUE 6.9	47
4	7	9	10	12			33			4.66	5.00	LOCAL ARL 7.9	8
4	7	11	3	28	70.3N	13.6W	71			3.40	4.00	JAN MAYEN IS	40
4	7	11	16	3	71.5N	13.0W	33	4.6	4.57	4.42		JAN MAYEN IS	40
4	7	12	45	36			33		3.51	4.20		LOCAL PMG 4.8	16
4	7	13	5	23	25.0N	125.1E	124			4.64	4.72	RYUKYU IS	20
4	7	15	7	35	27.0N	129.2E	33			5.40	4.72	RYUKYU IS	20
4	7	15	28	2	53.7N	170.1W	202	6.0	5.61	5.05		FOX IS	1
4	7	22	36	3	4.9S	103.2E	72	6.7	6.1	6.49	5.70	NEAR SW SUMATRA COAST	24
4	8		3	59	39.6N	104.9W	33					NE COLORADO	34
4	8	1	49	19	11.4N	62.6W	95	4.5	5.39	4.80		OFF VENEZUELA COAST	7
4	8	3	24	46			33		4.59	5.40		LOCAL NDI 7.1	26
4	8	5	57	40	31.4S	68.0W	232	4.4	4.94	4.60		ARGENTINA	8
4	8	6	24	51	5.5S	130.1E	33	4.9	5.09	4.76		BANDA SEA	24
4	8	6	43	21	41.9N	72.8E	33	4.7	5.66	4.95		KIRGHIZ SSR	48
4	8	7	56	50	18.8S	168.5E	33	4.6	5.06	4.30		NEW HEBRIDES IS	14
4	8	11	19	39	47.5N	153.2E	107	4.6	3.97	3.80		KURILE IS	19
4	8	11	53	21	4.2S	152.2E	158	4.8	5.03	4.63		NEW BRITAIN	15
4	8	14	38	27	27.7N	44.3W	33	5.0	5.18	4.66		ATLANTIC OCEAN	32
4	8	19	35	15			33		4.76	4.70		LOCAL PMG 6.1	16
4	8	20	8	34	5.6S	151.9E	41	5.0	4.64	4.90		NEW BRITAIN	15
4	8	20	50	58	10.4S	161.4E	33	4.9	4.68	4.60		SOLOMON IS	15
4	8	22	37	30	24.7S	179.8E	424	4.8	4.71	4.55		S OF FIJI IS	13
4	9		3	35	22.2N	85.6E	33		4.55	4.32		INDIA	26
4	9	1	39	9	71.2N	12.7W	20		5.06	4.67		OFF E GREENLAND COAST	40
4	9	2	2	25	17.7S	178.7W	538	4.9	5.13	4.95		FIJI IS	13
4	9	3	46	56	10.8N	62.6W	50	4.9				LESSER ANTILLES	7
4	9	4	32	26	17.8S	168.0E	35	4.6	4.76	4.45		NEW HEBRIDES	39
4	9	7	36	11	16.5N	61.1W		4.7				LESSER ANTILLES	7
4	9	12	20	58	34.6S	76.2W	33	4.6	5.10	4.55		OFF COAST OF CHILE	8
4	9	14	47	37	13.3N	61.0W	150	4.4				LESSER ANTILLES	7
4	9	14	54	5	4.0S	151.0E	33		3.13	4.50		NEW BRITAIN	15
4	9	18	41	54	10.5N	122.6E	55	4.3	5.02	5.00		PANAY FI	22
4	9	22	57	48	11.6S	166.1E	64	5.2	5.93	4.86		SANTA CRUZ IS	39
4	10		24	58	15.2S	173.1W	33	4.9	5.16	4.66		SAMOA IS	12
4	10	6	56	33	6.9N	73.2W	144	4.7	4.59	4.77		N COLOMBIA	7
4	10	7	50	30	9.2S	125.0E	33	5.2	5.75	5.10		TIMOR	24

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	10	8	27	44	12.0N	62.3W	130		3.6			LESSER ANTILLES	7
4	10	8	29	30	52.4N	170.5W	33		3.8			FOX IS	1
4	10	11	39	7	3.6N	148.1E	108		4.0	5.04	4.88	CAROLINE IS	17
4	10	12	27	36	18.4S	177.7W	558		4.4	4.78	4.40	FIJI IS	13
4	10	14	12	9	15.9N	91.7W	150		4.3	4.02	3.90	GUATEMALA	5
4	10	18	32	31	36.4S	73.3W	40		4.4	4.93	4.58	OFF CHILE COAST	8
4	10	20	16	24	47.6N	13.3E	40				3.20	AUSTRIA	36
4	10	23	10	47	16.8N	74.1W	130		4.6	4.84	4.56	CHIAPAS MEXICO	5
4	10	23	23	41	10.0S	160.6E	90		4.7	5.04	4.20	SOLOMON IS	15
4	11	1	13	44	51.9N	176.2W	70		4.4	4.61	4.20	ANDREANOF IS	1
4	11	2	58	41	1.8S	128.0E	33			5.52	5.00	HALMAHERA	23
4	11	4	12	39	14.8N	92.2W	33		3.9	3.53	3.65	GUATEMALA	5
4	11	9	33	10	9.9S	116.2E	33			5.45	4.71	S OF SUMBAWA	24
4	11	10	4	37	46.8N	155.5E	80		4.6	4.83	4.28	KURILE IS	19
4	11	11	2	18	52.4N	155.1E	33			4.52	4.10	W KAMCHATKA COAST	19
4	11	11	35	56	63.7N	148.6W	70				3.20	ALASKA	1
4	11	11	46	33	13.9N	61.4W	190		5.0			LESSER ANTILLES	7
4	11	12	10	22	19.7N	108.9W	33		4.6	4.10	4.30	OFF COAST OF MEXICO	5
4	11	13	2	30	53.8N	164.8W	33		4.3	5.12	4.57	FOX IS	1
4	11	14	19	10	79.1N	1.4E	15			4.38	4.25	SVALBARD	40
4	11	16	27	53			33			3.32	3.80	LOCAL MAN 2.3	22
4	11	16	45	25	60.2S	18.7W	33			5.31	4.95	SANDWICH REGION	10
4	11	17	17	11	17.9S	175.3W	171		4.5			TONGA IS	12
4	12		41	28	31.9N	78.8E	33		5.4	5.69	5.15	N INDIA	26
4	12	4	13	23	61.2N	147.3W	61		4.3	3.84	3.75	CENTRAL ALASKA	1
4	12	8	41	56	39.0S	176.7E	106			5.92	5.10	N IS NEW ZEALAND	11
4	12	10	44	17	44.9N	141.1E	214		4.4	3.91	3.75	SEA OF JAPAN	46
4	12	13	38	3	51.6N	175.0W	33		4.2	5.18	4.56	ANDREANOF IS	1
4	12	13	52	14			33			3.79	4.20	LOCAL ARE 4.4	8
4	12	16	20	25	16.8N	61.0W			3.9			LESSER ANTILLES	7
4	12	19	47	55	79.6N	5.1E	33		5.2	4.76	4.43	SVALBARD REGION	40
4	12	19	56	2			33			3.28	4.00	LOCAL MAN 2.2	22
4	12	20	48	17	16.7S	173.7W	33		5.0	5.95	5.11	TONGA IS	12
4	12	23	59	3	36.8N	22.3E	33			4.28	4.30	IONIAN SEA	30
4	13	2	20	57	6.2S	76.5W	125	6.7	6.3	6.88	5.93	CENTRAL PERU	8
4	13	3	20	39	19.2S	175.8W	222		4.5	4.88	4.40	TONGA IS	12
4	13	7	51	43	32.0S	68.4W	33		4.6	4.82	4.50	ARGENTINA	8
4	13	9	9	3	34.1S	109.9W	33			4.79	4.56	EASTER IS	43
4	13	11	24	13	36.7N	140.8E	111		4.3	3.99	3.80	HONSHU COAST	19
4	13	14	31	21	3.4S	135.4E	31		5.6	6.14	5.38	N NEW GUINEA COAST	16
4	13	14	49	36			33			4.69	5.50	LOCAL NDI 8.8	26
4	13	15	40	27	3.4S	135.7E	40			5.56	5.10	W IRIAN	16
4	13	17	32	33	17.0S	178.3W	631		5.2	4.99	4.50	FIJI IS	12
4	13	18	53	18	11.7N	87.8W	33		4.4	4.90	4.28	OFF NICARAGUA COAST	5
4	13	19	43	50	25.2N	141.7E	106		4.5	4.53	4.06	VOLCANO IS REGION	18
4	13	22	7	57	31.5S	179.6E	421			4.34	3.95	KERMADEC IS	12
4	14	4	7	26			33			3.28	3.80	LOCAL PMG 3.5	16
4	14	5	32	34	31.4S	177.8W	33		5.0	5.56	4.96	KERMADEC IS	12
4	14	6	28	33	30.0N	140.0E	33			5.36	4.70	S HONSHU	18
4	14	7	24	33	30.4N	140.7E	33					S HONSHU	18
4	14	7	52	5	30.6N	140.8E	33					S HONSHU	18
4	14	13	14	22	5.4S	154.2E	142		5.2	5.31	4.70	NEW BRITAIN	15
4	14	18	58	39	30.7N	139.8E	110			5.16	4.61	S OF HONSHU JAPAN	18
4	14	20	36	53	30.6N	139.8E	113		4.5	5.03	4.52	S OF HONSHU JAPAN	18
4	15	5	17	4	23.5S	68.9W	33			4.94	4.40	CHILE-BOLIVIA	8
4	15	5	40	41	23.5S	68.2W	105		5.0	5.32	4.84	CHILE-BOLIVIA BORDER	8
4	15	7	32	59	60.8N	147.5W	57			4.79	4.33	KENAI ALASKA	1
4	15	8	45	48			33			3.81	4.90	LOCAL NDI 6.7	26
4	15	15	1	26	4.0S	129.0E	148		4.4	4.82	4.50	CERAM IS	23
4	15	20	19	21	.9S	128.0E	33		4.5	5.51	4.88	HALMAHERA	23

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	15	22	18	26	39.5N	110.2W	33		4.2	2.40	3.85	E UTAH	34
4	15	22	36		15.0N	92.2W	33		4.6	4.66	4.40	MEXICO-GUATEMALA	5
4	15	23	39	27	18.3S	173.7W	33			5.29	4.80	TONGA IS	12
4	16	1	29	19	.8S	128.0E	33	7.0	6.1	6.58	5.27	HALMAHERA REGION	23
4	16	1	36	59	1.2S	128.4E	33		6.3	6.63	5.87	HALMAHERA	23
4	16	1	55	11	.7S	128.0E	32		6.0	6.61	5.77	HALMAHERA	23
4	16	2	5	52	1.3S	126.9E	33		5.8	6.89	5.70	HALMAHERA	23
4	16	2	50	57	.8S	127.8E	33			5.12	4.95	HALMAHERA	24
4	16	3	32	25	1.1S	127.9E	33		4.4	5.36	4.93	HALMAHERA	23
4	16	3	46	33	.9S	127.8E	33		4.4	5.02	5.10	HALMAHERA	23
4	16	4	4	5	.3S	127.6E	33					HALMAHERA	23
4	16	4	10	16	.8S	128.9E	33			4.95	4.40	HALMAHERA	23
4	16	5	31	59	18.4S	177.7W	575		4.5	5.10	4.65	FIJI IS REGION	13
4	16	5	34	35	44.8N	110.4W	33		3.7			YELLOWSTONE PARK	34
4	16	6	27	56	1.6S	127.8E	53		4.6	5.23	4.77	HALMAHERA	23
4	16	7	41	5	1.1S	129.5E	33		4.5	4.43	4.03	HALMAHERA	23
4	16	7	45	26	.0	127.6E	33		4.5	5.12	4.47	HALMAHERA	23
4	16	9	10	29	.9S	128.5E	33		4.4	5.23	4.40	HALMAHERA	23
4	16	12	3	42	1.0S	127.6E	33		4.7	6.22	5.21	HALMAHERA	23
4	16	16	54	12	48.1N	128.5W	33		4.2	4.20	3.70	W OF VANCOUVER IS	41
4	16	18	23	20			33			3.71	4.50	LOCAL BAG 5.0	22
4	16	18	47	9	35.4N	44.3E	104		5.2	4.82	4.74	IRAQ	30
4	16	20		47	1.3S	128.9E	33		4.6	5.76	4.74	HALMAHERA	23
4	16	20	33	51	17.0N	61.6W	50		4.3			LESSER ANTILLES	7
4	17		9	35	34.2S	106.3W	33		4.5	4.64	4.16	EASTER IS	43
4	17	1	10	17	.6S	128.1E	89			5.22	4.80	HALMAHERA REGION	23
4	17	1	42	52	31.7S	67.5W	79			2.51	4.10	ARGENTINA	8
4	17	2	11	26	19.6S	178.6E	33	6.3	5.9	6.03	5.14	FIJI IS	13
4	17	4	3	6	1.0S	128.3E	33		4.6	4.72	4.65	HALMAHERA	23
4	17	8	23	34	15.7S	174.1W	124		5.1	5.26	4.65	SAMOA IS	12
4	17	10	20	8	1.1S	128.0E	33			5.25	4.95	HALMAHERA	23
4	17	10	45	21	36.2N	70.7E	140			4.34	4.27	HINDU KUSH	47
4	17	12	13	34	18.4S	173.8W	33		4.8	4.94	5.00	TONGA IS	12
4	17	17	3	2	3.5S	135.4E	39		5.5	5.41	4.81	NEW GUINEA	16
4	17	17	49	30	58.3N	32.4W	33			4.73	4.30	N ATLANTIC OCEAN	32
4	17	17	55	3	58.3N	32.3W	33			4.50	4.40	N ATLANTIC OCEAN	32
4	17	18	24	27	54.9S	28.2W	26		5.3	5.53	5.12	SANDWICH IS	10
4	17	18	43	55	16.7N	61.8W	30		4.2			LESSER ANTILLES	7
4	17	19	8	26	5.4N	81.5W	33		4.2	4.50	4.50	S OF PANAMA	6
4	18	1	51	55	20.3S	177.7W	530		4.5	5.15	4.75	FIJI IS	12
4	18	2	37	20	.7S	128.4E	116		4.6	4.71	4.55	HALMAHERA	24
4	18	3	23	7	13.2S	176.5W	403		4.1	3.97	3.90	FIJI IS	12
4	18	4	27	40	19.4N	109.1W	33		4.5	4.04	4.40	JALISCO MEXICO	5
4	18	10	43	16	44.8N	110.2W	33					YELLOWSTONE PARK	34
4	18	12	49	16			33			3.80	4.80	LOCAL NNA 5.3	8
4	18	14	59	12	45.0N	110.9W	33					YELLOWSTONE PARK	34
4	18	22	1	8	1.3S	128.8E	33		4.7	5.31	4.81	HALMAHERA	23
4	18	22	4	34	22.0S	64.3W	33			4.70	5.50	SOUTHERN BOLIVIA	8
4	18	22	9	57	1.7S	128.1E	63			5.05	4.56	HALMAHERA	23
4	19	3	21	12	35.7N	118.1W	33					KERN CO CALIF	3
4	19	3	47	22	9.8S	120.5E	33		4.9	5.43	4.73	SUMBA	24
4	19	6	19	17	31.6N	115.7W	14			2.30	3.90	BAJA CALIF	4
4	19	6	20	15	33.1S	69.2W	87		4.6	4.49	4.40	NW ARGENTINA	8
4	19	6	53	39			33			4.59	5.00	LOCAL PMG 5.1	16
4	19	6	58	15	17.7S	167.3E	33			5.37	4.20	NEW HEBRIDES	14
4	19	7	30	19	35.3N	25.2E	47			4.59	4.43	CRETE	30
4	19	7	35	24	35.8N	96.9E	33	6.9	5.9	6.44	5.42	TSINGHAI CHINA	27
4	19	16	17	54	58.8S	26.0W	99			5.47	5.15	SANDWICH IS	10
4	19	16	26	57	1.3S	128.8E	33		4.7	5.46	4.87	HALMAHERA	23

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	19	20	28	3			33			3.26	4.60	LOCAL ANT 3.6	8
4	19	20	41	34	1.4S	128.9E	33		4.4	4.88	4.00	HALMAHERA	23
4	19	22	44	17	29.9S	177.7W	41		4.7	5.39	4.80	KERMADEC IS	12
4	20		43	56	38.6N	20.7E	48			4.40	4.20	OFF W COAST OF GREECE	30
4	20		50	1	46.4N	151.1E	102			5.55	4.97	KURILE IS	19
4	20	1	7	57	1.2S	178.9E	28		5.1	5.11	4.72	HALMAHERA	23
4	20	2	45	28	69.7N	16.5E	35			4.09	5.10	N NORWAY	40
4	20	3	46	59	27.5S	70.2W	33		4.7	5.28	5.01	N CHILE	8
4	20	7	3	45	52.4N	160.0E	33		4.4	4.86	4.50	OFF KAMCHATKA COAST	19
4	20	14	30	37	17.5N	98.6W	33		3.9	3.86	3.80	GUERRERO MEXICO	5
4	20	15	15	5			33			3.10	4.20	LOCAL ARE 5.3	8
4	20	16	55	54	22.3S	64.8W	271		4.2	5.06	4.86	BOLIVIA-ARGENTINA	8
4	20	20	32	16	52.3N	159.5E	33		5.0	5.26	4.63	OFF KAMCHATKA COAST	19
4	20	22	44	9			33			3.96	4.60	LOCAL QUE 8.1	47
4	21		57	57	16.6S	178.3W	33		4.6	5.67	5.10	FIJI IS	12
4	21	4	38	22	24.1N	177.1E	33	6.0	5.2	5.84	5.35	NEAR E FORMOSA COAST	21
4	21	9	17	5	26.8N	128.5E	28	5.9		5.76	4.86	RYUKYU IS	20
4	21	10	38	30	3.2S	146.9E	33		6.0	5.43	4.90	ADMIRALTY IS	16
4	21	13	2	45	35.6N	138.2E	46		4.3	4.65	4.10	HONSHU JAPAN	19
4	21	15	3	34			33			3.32	4.30	LOCAL PMG 3.7	16
4	21	16	28	24			33			3.98	4.80	LOCAL MAN 3.9	22
4	21	16	44	16			33			3.87	4.90	LOCAL ARE 6.0	8
4	21	18	44	50	11.7N	67.3W	100		4.0			LESSER ANTILLES	7
4	21	21	17	58	.9S	178.1E	33		4.6	5.68	4.90	HALMAHERA	23
4	21	23	16	50	1.5S	128.7E	33			4.94	4.58	HALMAHERA	23
4	22		51	9	31.5N	74.0E	37			4.06	4.08	W PAKISTAN	47
4	22	1	48	9	7.0S	129.2E	135		5.3	5.63	4.77	BANDA SEA	23
4	22	7	25	30	29.7S	177.6W	33		5.3	6.15	5.29	KERMADEC IS	12
4	22	8	30	10	5.1S	154.1E	132		5.2	5.15	4.90	SOLOMON IS	15
4	22	10	41	13	12.2N	143.6E	33			4.80	4.70	MARIANA IS	17
4	22	10	57	55			33			4.58	4.70	LOCAL PMG 5.7	16
4	22	15	6	53	19.8S	175.4W	53		5.6	5.34	4.85	TONGA IS	12
4	22	15	38	14	41.3N	39.0E	33		4.7	4.74	4.73	BLACK SEA	30
4	22	22	34	34			33			3.23	3.80	LOCAL ARE 5.0	8
4	23	1	5	27			33			3.55	4.60	LOCAL QUE 7.0	47
4	23	2	35	40	32.3S	72.5W	33					CENTRAL CHILL	8
4	23	2	45	4	11.4S	165.9E	97		4.1	5.45	5.20	SANTA CRUZ IS	39
4	23	2	51	17	46.9N	103.7E	33		5.1	5.68	4.86	OUTER MONGOLIA	28
4	23	3	37	44	19.9N	109.2W	33		4.2	3.30	4.60	REVILLA GIGEDO	5
4	23	7	10	44	60.7S	24.7W	33		5.2	5.29	5.03	SANDWICH IS	10
4	23	9	55	7	25.7N	99.5E	33		5.1	5.05	4.65	YUNNAN PROV CHINA	26
4	23	11	37	3	12.2N	125.7E	30			4.82	4.85	PHILIPPINE IS	22
4	23	12	58	7	50.9N	128.8W	43		3.3	3.15	3.30	VANCOUVER IS	2
4	23	14	2	56	42.6N	19.5E	38		5.1	4.53	4.86	YUGOSLAVIA ALBANIA	31
4	23	15	23	53	11.7N	61.5W	115		3.5			LESSER ANTILLES	7
4	23	15	32	50	17.8S	178.7W	533		4.4	4.71	4.24	FIJI IS	13
4	23	18	52	24	5.1S	146.1E	134			4.45	4.36	NEW GUINEA COAST	16
4	23	19	42	53			33			3.58	4.50	LOCAL QUE 7.1	47
4	23	19	49	59	23.8S	179.9E	540			4.88	4.47	S OF FIJI IS	12
4	24	2	33	10	.8S	91.6W	33		4.1	4.65	4.30	GALAPAGOS IS REGION	44
4	24	3	55	6	17.2S	174.5W	190		4.7	5.02	4.57	TONGA IS	12
4	24	5	33	50	10.4S	161.4E	80		4.7			SOLOMON IS	15
4	24	5	51	44	1.1S	127.2E	33		4.8	4.99	4.50	HALMAHERA REGION	23
4	24	7	10	13	21.0S	66.2W	164			3.71	4.85	SW BOLIVIA	8
4	24	7	22	9	31.1S	66.8W	110		4.3	4.25	4.03	ARGENTINA	8
4	24	13	32	12	27.0N	128.8E	33		5.1	5.63	4.78	RYUKYU IS REGION	20
4	24	13	33	07	39.6N	110.0W	42		4.6	2.29	3.20	NE UTAH	34
4	24	14	7	26			33			3.53	4.10	LOCAL ARE 4.9	8
4	24	15	58	7	52.1N	157.3E	33		4.3	4.93	4.30	KAMCHATKA	19
4	24	20	31	9	36.3N	71.4E	125			3.47	3.95	HINDU KUSH	48

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	24	20	48	16	30.1S	177.8W	33			5.24	4.63	KERMADEC IS	12
4	24	21	42	49	20.8S	179.1W	603		5.1	5.62	5.02	FIJI IS REGION	13
4	24	22	1	45	17.7N	61.3W			4.8			LESSER ANTILLES	7
4	24	22	29	36	39.7N	104.8W	33			4.1		NE COLORADO	34
4	25	5	5	27			33			4.53	5.40	LOCAL ATU 5.7	30
4	25	6	5	32	42.4N	19.4E	44			4.44	4.80	YUGOSLAVIA ALBANIA	31
4	25	7	20	9	12.4N	87.4W						NICARAGUA COAST	6
4	25	8	12	57	4.7N	122.4E	610		5.5	5.29	4.86	CELEBES SEA	23
4	25	10	12	32			33			4.50	4.00	LOCAL PMG 4.9	16
4	25	11	9	30	4.3N	62.4E	33			4.89	4.22	MALDIVE IS	33
4	25	11	19	18	31.7N	140.5E	33			4.72	4.28	S OF HONSHU JAPAN	20
4	25	11	54	59	29.9N	136.9E	33			4.63	4.30	S OF HONSHU JAPAN	18
4	25	12	14	1	35.8N	69.6E	210			3.30	3.70	HINDU KUSH	48
4	25	13	2	29	23.4S	113.0W	33		4.6	5.02	4.50	EASTER IS	43
4	25	13	36	14	45.2N	5.9E	33			4.01	4.83	SE FRANCE	36
4	25	16	35	56	1.3S	128.7E	33		5.3	5.81	5.14	HALMAHERA	23
4	25	17	50	25	21.6S	178.0W	380		5.0	5.24	4.63	FIJI IS	12
4	25	19	30	47			33			3.64	4.30	LOCAL QUE 6.6	47
4	25	21	6	44	28.1S	70.0W	33			4.71	5.15	N CHILE	8
4	26	1	46	20			33			3.84	4.00	LOCAL PMG 2.1	16
4	26	5	37	31	16.6S	73.7W	23			3.94	4.50	S PERU COAST	8
4	26	7	49	46			33			3.96	4.00	LOCAL PMG 3.6	16
4	26	8	18	9	18.0S	173.8W	18		5.0	5.60	5.00	TONGA IS	12
4	26	15	22	51	64.4N	148.3W	139		4.3	4.82	3.80	CENTRAL ALASKA	1
4	26	16	44	12	18.1S	69.0W	110		4.7	5.05	4.84	PERU-CHILE BORDER	8
4	26	23	45	1	24.1N	122.5E	33		4.9	5.32	4.94	OFF E FORMOSA COAST	21
4	27	01	45	07						3.07	3.30	LOCAL ATU 2.1	30
4	27	3	42	34	66.7N	19.2W	33		4.6	4.15	4.24	N ICELAND COAST	40
4	27	4	53	51	44.8N	110.4W	33		4.4	3.08	4.40	YELLOWSTONE PARK	34
4	27	8	33	42	15.9S	173.9W	100		4.9	5.03	4.83	TONGA IS	12
4	27	8	42	58	.6S	128.4E	33	6.1	4.9	5.85	5.06	HALMAHERA	23
4	27	8	46	24			33			3.69	4.20	LOCAL PMG 4.7	16
4	27	11	3	29	22.8S	68.9W	100		4.8	5.15	4.96	N CHILE	8
4	27	13	39	35	45.0N	111.4W	33		4.0	3.28	4.60	SW MONTANA	32
4	27	15	10	10	61.4N	148.3W	39			3.97	3.50	S ALASKA	1
4	27	18	54	34	16.5S	172.6W	33		4.6			TONGA IS	12
4	27	19	29	43	30.3S	70.3W	59		4.7	5.38	5.00	CENTRAL CHILE	8
4	27	21	38	46			33			4.55	5.30	LOCAL ARE 5.2	8
4	27	23	57	30			33			3.28	4.35	N CHILE	8
4	28		42	11	40.5N	27.4E	160			4.02	5.00	NW TURKEY	30
4	28	1	51	7	1.1S	128.6E	26			4.95	4.68	HALMAHERA	23
4	28	2	5	16	24.0S	67.9W	120		4.2	4.45	4.25	CHILE-ARGENTINA	8
4	28	4	5	5	30.9N	131.1E	64			4.13	4.26	S KYUSHU JAPAN	20
4	28	4	51	20	18.9S	170.2E	229					NEW HEBRIDES	14
4	28	5	22	8	12.1S	78.0W	50		4.9	4.96	4.61	NEAR PERU COAST	8
4	28	14	16	6	17.6S	178.5W	505		4.5	4.70	4.41	FIJI IS	12
4	28	15	25	30	17.6S	174.5W	60		4.7			TONGA IS	12
4	28	16	38	51	21.5S	67.6W	147		4.1	3.11	4.06	S BOLIVIA	8
4	28	17	1	28			33			3.36	3.90	LOCAL PMG 3.5	16
4	28	17	28	20	.6S	128.5E	33			4.60	4.30	HALMAHERA	23
4	28	18	13	31	9.8S	160.3E	30		5.4	4.99	4.80	SOLOMON IS	15
4	28	19	50	11	36.1N	71.3E	150		4.8	4.82	4.76	HINDU KUSH	48
4	28	21	57	42	24.0S	68.1W	33					N CHILE	8
4	28	22	54	28	11.0S	130.1E	479			4.11	4.10	BANDA SEA	24
4	28	23	21	35	39.3N	141.0E	33		4.3			E HONSHU	19
4	28	23	47	7			33			3.85	4.90	LOCAL PMG 4.6	16
4	29		17	57			33			3.12	4.00	LOCAL NNA 4.9	8
4	29	1	20	47	7.9S	158.7E	72		4.8	4.25	4.00	SOLOMON IS	15
4	29	5	3	37	23.9N	121.6E	118		4.3	4.64	4.71	N LUZON PI	21
4	29	8	34	25	10.7S	164.5E	50		5.1	3.70	4.00	SANTA CRUZ IS	14

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
4	29	9	21	34	17.8S	13.2W	33			4.64	4.70	S ATLANTIC OCEAN	32
4	29	14	51	52	63.9S	159.5E	33		5.9	6.13	5.35	BALLENY IS	45
4	29	20	35	41	17.4N	92.7W	27		5.2	5.41	4.76	S MEXICO	5
4	29	21	44	17	51.4N	178.6E	60	5.7	5.6	6.05	5.04	ANDREANOF IS	1
4	30		36	3	51.3N	178.5E	66		4.6	4.74	4.26	ANDREANOF IS	1
4	30		58	18	.7S	129.0E	33	6.6	5.6	6.42	5.18	HALMAHERA	23
4	30	2	34	53	7.3N	126.5E	34		4.5	4.73	4.44	COAST MINDANAO PI	22
4	30	3	18	52	51.4N	179.1E	50		4.5	4.86	4.62	RAT IS	1
4	30	3	26	4	51.2N	178.6E	50		4.9	5.59	4.90	RAT IS	1
4	30	5	20	48	39.9N	20.9E	33			4.26	4.20	ALBANIA-GREECE	30
4	30	7	7	56	51.6N	178.4E	64		5.1	5.88	5.05	RAT IS	1
4	30	7	58	28						3.03	4.40	LOCAL CHG 6.9	25
4	30	8	26	23	17.1S	175.1W	219		4.9	4.19	3.90	TONGA IS	12
4	30	10	20	54	10.6N	94.4E	33			5.48	4.76	ANDAMAN IS REGION	24
4	30	11	4		15.2N	93.0W	33		4.3	4.40	4.15	CHIPAS MEXICO	5
4	30	14		30			33			3.93	4.70	LOCAL NDI 6.8	47
4	30	18	43	14	8.2S	79.9W	60		4.8	5.62	4.99	NEAR PERU COAST	8
4	30	23	50	27	22.2S	66.9W	95		4.7	3.91	4.45	S BOLIVIA	8

MU	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	1	1	5	18	52.4N	174.5W	78		5.2	5.64	4.84	ANDREANOF IS	1
5	1	10	3	20	19.0S	169.0E	140	6.8	6.2	6.85	5.59	NEW HEBRIDES IS	14
5	1	16	38	43	13.3N	91.8W			4.2	3.00	3.30	W GUATEMALA	5
5	1	16	45	4	19.0S	169.3E	130					NEW HEBRIDES	14
5	1	19	52	22	38.4N	75.4E	145		4.3	3.53	4.13	SINKIANG CHINA	27
5	2	1	9	22	36.7N	89.4W	18			2.18	3.90	SE MISSOURI	34
5	2	1	58	25	28.5N	54.8E	45		5.8	4.60	4.42	S IRAN	29
5	2	9	19	22	24.6S	178.4W	33		5.6	6.55	5.70	FIJI IS	12
5	2	10	49	51			33			4.12	4.80	LOCAL PMG 7.8	16
5	2	13	5	28	6.5N	72.7W	202			2.91	3.20	COLOMBIA	7
5	2	16	47	45			33			4.41	5.30	LOCAL IST 7.8	30
5	2	23	13	13	63.2N	148.9W	81		6.1	4.54	4.00	CENTRAL ALASKA	1
5	3	2	14	44	37.7N	118.8W	15	4.1		2.50	4.06	MONO CO CALIF	3
5	3	3	17	58			33			3.12	4.50	LOCAL BAG 4.2	22
5	3	10	44	28	30.7N	51.7E	25		5.3	4.56	4.43	IRAN	29
5	3	10	54	43	15.0S	173.3W	33		5.0	5.35	4.82	TONGA IS	13
5	3	16	32	56	45.0N	111.2W	33					HEBGEN LAKE	34
5	3	19	19	15	17.6N	91.8W	90		4.1	3.61	3.90	CHIAPAS MEXICO	5
5	4	4	41	19	4.7N	73.8W	43		4.0	3.70	3.80	COLOMBIA	7
5	4	5	56	4	51.8N	175.4W	69		5.5	5.38	4.85	ANDREANOF IS	1
5	4	7	38	53	24.7S	66.6W	153		4.6	4.29	4.36	ARGENTINA	8
5	4	12	29	43	44.3N	128.7W	33			2.84	3.60	OFF OREGON COAST	3
5	4	16	19	28	13.2N	90.8W	164		5.1	4.84	4.56	OFF GUATEMALA COAST	5
5	4	16	42	1	55.1N	160.1E	33		5.0	4.86	4.60	KAMCHATKA	19
5	4	18	24	9	54.4S	144.0E	33			4.81	4.70	S OF AUSTRALIA	45
5	4	19	1	41	56.1S	27.1W	33			5.50	5.03	SANDWICH IS	10
5	4	21	40	39	19.0N	108.9W	33			4.54	4.10	JALISCO MEXICO COAST	5
5	4	22	9	24	33.0N	140.5E	169		4.8	3.97	4.40	S OF HONSHU JAPAN	19
5	5	3	49	34	19.8S	177.0W	33			5.97	5.30	FIJI IS	12
5	5	11	4	15	32.7N	139.8E	132		4.1	4.61	4.50	S OF HONSHU JAPAN	19
5	5	12	44	34	14.2N	91.9W	33		4.3	4.20	4.00	GUATEMALA	5
5	5	15	17	2	24.7S	69.5W	50		5.1	5.83	5.23	N CHILE	8
5	5	16	38	1			33			3.43	4.20	LOCAL IST 2.4	30
5	5	17	11	47	17.5S	173.7W	33		5.0	5.39	4.79	TONGA IS REGION	12
5	5	21	13	8			33			3.63	4.10	LOCAL PMG 3.5	16
5	6	5	9		39.6N	110.0W	33					UTAH	34

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	6	5	53	20	2.5S	138.2E	34		5.0	4.87	4.76	W IRIAN	16
5	6	8	38	33	9.1S	112.5E	84		5.7	5.65	5.10	S JAVA COAST	24
5	6	9	15	24	9.9S	160.6E	76		4.9	4.68	4.50	SOLOMON IS	15
5	6	19	30	28	39.5N	20.6E	33		5.1	4.26	4.70	GREECE-ALBANIA	30
5	7	2	17	37	36.7N	83.1E	33		5.8	5.34	4.82	SINKIANG CHINA	27
5	7	3	16	41	36.6N	70.8E	230		5.1	4.76	4.60	HINDU KUSH	48
5	7	4	27	26	47.9N	156.2E	33		4.6	4.61	4.80	KURILE IS REGION	19
5	7	5		50	18.8N	145.5E	93		4.9	5.16	4.60	MARIANA IS	18
5	7	5	16	21	64.5N	146.9W	33		4.5	4.35	4.45	CENTRAL ALASKA	1
5	7	7	7	45	36.7N	121.8W	14	4.5		3.35	4.30	NEAR CALIF COAST	3
5	7	9	7	15			33			3.75	4.60	LOCAL PMG 4.8	16
5	7	11	57	36			33			3.90	4.50	LOCAL PMG 5.5	16
5	7	13	21	59			33			3.67	4.80	LOCAL NNA 6.2	8
5	7	16	23	11	22.0S	68.6W	110		5.4	5.55	5.09	N CHILE	8
5	7	18		22	12.1N	72.2W	33		4.4	4.85	4.50	NE COLOMBIA COAST	7
5	7	20	27	6						3.01	4.10	LOCAL IST 2.0	30
5	8	2	8	46	26.6S	179.8E	33		4.4	4.84	4.50	KERMADEC IS	12
5	8	2	9	8	46.0N	12.1E	34			3.15	3.90	N ITALY	36
5	8	4	28	20	15.9S	171.9W	33		4.6	4.89	4.50	SAMOA IS	12
5	8	8	50	56	54.9N	163.9W	89		5.6	5.44	4.89	UNIMAK IS ALASKA	1
5	8	10	22	11	36.6N	141.0E	53	6.4	6.1	6.24	5.38	HONSHU JAPAN	19
5	8	13	56	27	58.6S	61.5W	33		5.8	5.35	5.15	DRAKE PASSAGE	10
5	8	14	15	3	21.7N	85.0E	33			4.43	3.93	INDIA	26
5	8	15	24		5.3N	125.7E	70		5.6	5.82	5.11	MINDANAO PI	22
5	8	19	15	40	17.2S	175.0W	199		4.6	4.72	4.80	TONGA IS	12
5	8	19	50	7	3.6S	103.0E	137			4.56	4.35	NEAR SW SUMATRA COAST	24
5	8	20	28	11	14.5S	172.9W	33		4.7	4.42	4.20	SAMOA IS	39
5	8	21	26	53	32.1N	141.5E	39		4.9	4.73	4.50	S OF HONSHU JAPAN	18
5	9	7	25	54	28.5S	179.0W	267			4.04	4.00	KERMADEC IS	12
5	9	10	3	36	31.8S	71.2W	91		4.4	4.17	4.62	CENTRAL CHILE	8
5	9	11	23	30	31.7N	142.3E	33		3.9	4.65	4.37	S HONSHU	18
5	9	15	3	41	12.2N	86.9W	34		5.3	5.09	4.67	NICARAGUA W COAST	6
5	9	15	6	24	12.7N	86.6W	33		4.1	4.79	4.10	NICARAGUA	6
5	9	19	28	2	52.3S	27.5E	33			4.97	4.72	SW PRINCE EDWARD IS	33
5	9	20	45	14	53.9N	165.2W	33			5.23	4.65	FOX IS	1
5	9	23	33	13			33			3.54	4.00	LOCAL ARE 5.9	8
5	10	1	21	55			33			3.26	4.50	LOCAL ARE 5.3	8
5	10	1	49	25	30.2N	130.8E	33		5.3	4.32	4.32	S OF KYUSHU JAPAN	20
5	10	3	6	50	51.1N	172.9E	33		4.2			NEAR IS	1
5	10	4	28	41	20.0S	168.1E	33		4.9	5.68	5.18	LOYALTY IS	14
5	10	10	29	13	21.5S	178.5W	175		4.7	4.37	4.20	FIJI IS	12
5	10	10	57	35	40.9N	47.8E	150		5.5	5.37	4.40	AZERBAIJAN SSR	29
5	10	11	9	42	8.4S	67.6E	33		5.9	4.81	4.75	INDIAN OCEAN	33
5	10	13	5	21	7.8S	74.5W	110		4.8	4.83	4.37	CENTRAL PERU	8
5	10	20	38	56	5.8S	108.1W	33					SW GALAPAGOS	44
5	10	22	27	42	2.2S	77.6W	33	6.4	5.5	6.29	5.33	ECUADOR	8
5	11	2	55	58	45.2N	110.0W	33					S MONTANA	34
5	11	1	10	48	32.8N	19.4E	33		5.8	4.13	4.50	LIBYA COAST	31
5	11	3	1		44.9N	110.8W	33			2.23	3.90	YELLOWSTONE PARK	34
5	11	4	44	19	15.4S	177.1W	400		4.9	5.08	4.70	FIJI IS	12
5	11	7	49	47	17.9S	178.5W	590		4.9	5.18	4.70	FIJI IS	13
5	11	11	46	37	19.3S	169.5E	450			4.76	4.65	NEW HEBRIDES IS	14
5	11	17	49	43	24.2N	122.5E	33		4.5	5.17	4.75	OFF E FORMOSA COAST	21
5	11	17	54	51			33			3.99	5.00	LOCAL LPS 3.3	6
5	11	19	44	24	34.9S	108.2W	33		4.6	4.74	4.55	EASTER IS	43
5	12	1	7	36	41.8N	136.5E	307		4.6	4.73	4.21	SEA OF JAPAN	46
5	12	2	57	16	36.5N	140.6E	33		4.9	4.66	4.42	HONSHU JAPAN	19
5	12	4	10	53			33			3.75	4.90	LOCAL ARE 4.2	8
5	12	4	46	32	17.3S	167.6E	53			2.89	3.40	NEW HEBRIDES	14
5	12	9	42	58	57.5S	159.4E	44		6.2	6.38	5.64	MACQUARIE IS	11



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	12	11		48	3.0S	78.7W	33			3.93	4.20	ECUADOR	8
5	12	16	7	32			33			3.14	3.80	LOCAL PMG 4.1	16
5	12	16	37	11	42.2S	72.1W	33			4.72	4.40	S CHILE	9
5	12	19	22	31	3.4S	146.9E	33		4.9	5.55	4.80	BISMARCK SEA	16
5	12	20	8	43	57.4N	153.9W	80	6.6	5.9	6.73	5.72	KODIAK IS ALASKA	1
5	12	20	37	13	55.9N	163.1E	33	6.0	5.5	5.69	5.13	KAMCHATKA COAST	19
5	13	1	37	36	6.7N	73.1W	140		4.3	4.42	4.26	N COLOMBIA	7
5	13	1	44	25			33			3.34	4.40	LOCAL ARE 5.8	8
5	13	6	58	51						3.05	3.50	LOCAL PMG 3.6	16
5	13	7	10	38	25.7S	179.6E	453		4.8	4.84	4.46	FIJI IS	12
5	13	9	44	13	40.4N	142.1E	52		4.1	4.93	4.60	NEAR N HONSHU COAST	19
5	13	12	44	1	14.5N	92.9W	60	5.1	5.6	5.67	5.10	MEXICO-GUATEMALA	5
5	13	13	12	56	14.1N	93.1W	33			5.39	4.65	OFF CHIAPAS COAST	5
5	13	14	7	46	19.5S	169.3E	163	5.0	5.6	5.81	5.13	NEW HEBRIDES IS	14
5	13	17	35	46	5.5S	154.6E	386		5.1	4.13	4.55	SOLOMON IS	15
5	13	17	50	20	61.1N	150.8W	93		4.5	4.12	4.02	KENAI PENINSULA	1
5	13	18	3	4	20.6S	70.7W	33			4.39	4.66	N CHILE COAST	8
5	13	22	48	10	6.0S	150.1E	94			4.85	4.75	NEW BRITAIN IS	15
5	14	8	5	31	10.0N	62.0W	53			4.24	4.00	VENEZUELA COAST	7
5	14	11	23		.2N	80.1W	33		4.5	4.31	4.20	ECUADOR COAST	8
5	14	13	50	41	57.3N	154.2W	37		4.6	4.32	4.11	KODIAK IS ALASKA	1
5	14	15	8	4	5.6S	127.8E	405		5.3	5.02	4.72	BANDA SEA	24
5	14	17	56	15	30.2S	177.7W	33			5.02	4.85	KERMADEC IS	12
5	14	23	11	54			33			3.15	4.50	LOCAL SHL 7.6	26
5	14	23	14	47	4.1S	152.8E	58		5.0	5.47	5.00	NEW BRITAIN	16
5	15	2	17	54	45.8S	74.8W	33			4.71	4.50	S CHILE COAST	9
5	15	2	52	39	3.4S	146.8E	33		5.7	5.15	5.10	BISMARCK SEA	16
5	15	6	35	24	38.5N	75.5E	33		5.0	4.99	4.86	HINDU KUSH	48
5	15	11	15	40	41.8N	20.2E	33			4.52	4.73	ALBANIA	30
5	15	12	8	8	38.0N	26.4W	33	5.8	5.3	5.21	4.80	AZORES REGION	32
5	15	15	32	11	24.1N	122.8E	33		5.6	5.15	4.77	OFF E FORMOSA COAST	21
5	15	18	8	28			33			4.65	5.40	LOCAL LPS 7.4	6
5	16	1	28	5	22.6S	171.6E	79		4.9	4.89	4.60	NEW HEBRIDES IS	14
5	16	9	1	22	30.0S	177.2W	53			5.81	5.20	KERMADEC IS	12
5	16	15	52	18	.8S	128.5E	50		4.4	5.00	4.78	HALMAHERA REGION	23
5	16	16	18		1.0S	128.8E	33		4.3	5.44	4.98	HALMAHERA	23
5	16	19	20	6	17.6S	178.7W	510		4.8	5.26	4.86	FIJI IS	13
5	16	20	42	34	16.8N	99.0W	33			5.98	4.86	GUERRERO MEXICO	5
5	16	22	5	53	41.6N	142.0E	65		5.0	4.35	4.35	S OF HOKKAIDO JAPAN	19
5	16	23	37	26	43.9N	147.1E	33		4.2	4.84	4.90	KURILE IS	19
5	17	4	6	36	45.3N	150.8E	33	6.0	5.9	6.32	5.43	KURILE IS	46
5	17	6	9	18	15.7N	120.1E	80	6.2	5.5	5.92	5.21	NEAR W LUZON COAST	22
5	17	7	33	18	31.0S	179.8W	358		4.7	5.40	4.70	KERMADEC IS REGION	12
5	17	10	34	55	32.3N	140.7E	115		4.2			S HONSHU	18
5	17	11	57	6	43.1N	41.5E	33		5.3	3.17	3.60	GEORGIAN SSR	30
5	17	12	9	5	41.7N	141.9E	47		5.4	5.39	4.77	S HOKKAIDO JAPAN	19
5	17	14	11	1	14.1S	74.2W	51		5.1	5.25	5.02	S PERU	8
5	17	21	26	36			33			3.23	4.40	LOCAL PMG 3.9	16
5	17	21	31	12	.8S	128.8E	231		4.7	4.72	4.37	HALMAHERA REGION	23
5	17	22	40	7	24.4S	177.2W	70		5.9	6.01	5.13	TONGA IS	12
5	17	23	4	58	13.5N	142.5E	163		4.3	4.40	4.38	MARIANA IS	17
5	17	23	36	42	63.5N	148.5W	33				3.20	ALASKA	1
5	18	4	4	24	29.6S	68.3W	30			4.80	4.68	ARGENTINA	8
5	18	5	33	25	29.6S	68.5W	29			5.27	4.95	ARGENTINA	8
5	18	12	20	32	8.2S	115.6E	39		5.9	5.73	5.25	BALI	24
5	18	13	3	36	8.2S	115.7E	68			5.55	5.10	BALI	24
5	18	14	51	14	16.6S	173.1W	33		4.8	4.73	4.40	TONGA IS	12
5	18	16	32	38	11.5S	163.0E	33		4.2	4.04	4.10	SOLOMON IS	15
5	18	16	43	12	16.0N	119.5E	47		5.0	4.86	4.53	NEAR W LUZON COAST	22
5	18	20	58	53	35.7N	115.1W	33		4.4	4.13	4.20	S NEVADA	3

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	18	23	16	16	41.0N	142.0E	52		5.0	5.10	4.70	HONSHU JAPAN	19
5	18	23	47	17	49.5N	156.2E	70		4.8	5.30	4.84	KURILE IS	19
5	19	1	3	4	46.5S	75.1W	33	6.8	6.5	6.73	5.50	S CHILE	9
5	19	4	33	36	17.0N	100.0W	40			4.42	4.23	GUERRO MEXICO	5
5	19	8	10	21	44.4N	111.1W	33					SW MONTANA	34
5	19	9	48	26	4.1S	103.1E	96			5.29	4.83	OFF SUMATRA COAST	24
5	19	8	20	37	15.5S	167.8E	113			2.86	3.30	NEW HEBRIDES	14
5	19	10		5	46.0N	14.7E	33		4.5	4.85	4.67	NW YUGOSLAVIA	36
5	19	11	2	36	1.5N	126.0E	106			4.42	4.47	MOLUCCA SEA	23
5	19	19	21	22	2.3N	128.6E	166		4.3	5.37	4.85	HALMAHERA REGION	23
5	19	21	35	49	23.8N	45.9W	33		6.0	6.43	5.53	N ATLANTIC OCEAN	32
5	19	23	31	25	17.8S	69.4W	148		5.5	5.57	4.95	PERU-BOLIVIA-CHILE	8
5	20	1	35	32	8.3N	83.0W	33			4.66	4.42	PANAMA-COSTA RICA	6
5	20	2	39	59	40.3S	75.6W	33			3.91	4.10	S CHILE COAST	9
5	20	2	43	16	8.3N	83.0W	33		4.3	4.54	4.38	PANAMA-COSTA RICA	6
5	20	5	14	23	10.4S	161.7E	90		4.7	4.24	4.45	SOLOMON IS	15
5	20	9	8	4	19.1N	121.3E	50		4.7	4.31	4.61	OFF N LUZON COAST PI	22
5	20	11	38		30.7S	178.3W	34	6.8	6.2	7.16	5.73	KERMADEC IS	12
5	20	13	22	12	1.6N	77.7W	140			4.83	4.50	COLOMBIA	8
5	20	13	54	6	24.1N	45.9W	33		4.5	5.21	4.70	N ATLANTIC OCEAN	32
5	20	17	1	40	72.1N	126.3E	33		4.5	5.63	4.94	YAKUTSK USSR	40
5	20	19	15	30	25.8S	176.3W	32	6.8	6.2	5.81	5.20	KERMADEC IS	12
5	20	21	4	57	2.5N	128.8E	148		4.9	5.12	4.83	HALMAHERA	23
5	21		58	7	56.0S	123.9W	33			4.85	4.58	S PACIFIC OCEAN	43
5	21	9	44	40	18.9N	146.0E	180			4.31	4.60	MARIANA IS	18
5	21	10	16	19	21.1S	69.0W	110			2.40	4.00	N CHILE	8
5	21	15	16	7	11.0S	163.1E	64		4.8	4.22	4.62	SOLOMON IS	15
5	21	16	23	28	51.4N	159.1E	33		5.9	4.38	4.30	KAMCHATKA	19
5	21	17	10	48	36.3N	140.3E	33		4.1	4.54	4.10	E HONSHU COAST	19
5	21	17	30	15	11.1S	163.3E	33	5.9	5.4	5.75	5.14	SOLOMON IS	15
5	21	17	40	45	11.0S	163.2E	69		4.6	4.33	4.60	SOLOMON IS	15
5	21	17	51	8	22.1S	179.5W	579		4.9	4.70	4.35	FIJI IS	12
5	21	18	10	12	29.5S	178.1W	82			4.75	4.50	KERMADEC IS	12
5	21	18	34	59	10.8S	163.2E	60		4.6	4.37	4.56	SOLOMON IS	15
5	21	20	3	32	24.0N	108.6W	33					CALIF GULF	4
5	21	20	21	5	11.1S	163.5E	33		4.6	4.18	4.18	SOLOMON IS	15
5	22	2	27	56	11.3S	163.2E	60		5.1	5.22	4.95	SOLOMON IS	15
5	22	4	24	30	17.7N	106.0W	33		4.6	4.94	4.44	OFF W MEXICO COAST	5
5	22	5	42	30	46.0N	151.2E	86		4.7	4.84	4.30	KURILE IS	19
5	22	7	52	1	30.3S	177.6W	168			4.52	4.60	KERMADEC IS	12
5	22	10	18	27	11.0S	163.5E	37		5.2	5.03	4.64	SOLOMON IS	15
5	22	13	56	43	48.6N	154.7E	22	6.3	6.3	6.54	5.23	KURILE IS	19
5	22	15	47	48	4.3N	127.9E	58		5.0	5.84	5.25	MOLUCCA PASSAGE	23
5	22	16	25	36	52.2N	165.3W	33		4.2	5.73	4.91	FOX IS ALEUTIANS	1
5	22	16	28	49	55.1N	160.2E	33			4.98	4.60	KAMCHATKA	19
5	22	21	53	2	8.2S	115.7E	33		5.6	6.18	5.31	JAVA SEA	23
5	22	22		44	49.3N	155.4E	33		5.1	5.14	4.66	KURILE IS	19
5	22	22	40	59	37.0N	123.1W	14	4.7		4.02	3.85	CALIFORNIA COAST	3
5	23		51	40	1.6N	126.4E	33		4.8	5.60	4.85	MOLUCCA PASSAGE	23
5	23	2	27	7	11.1S	163.5E	33		4.7	4.20	4.16	SOLOMON IS	15
5	23	3	15	28	60.0N	150.4W	36		5.2	3.42	3.45	KENAI PENINSULA ALASKA	1
5	23	3	33	19	15.0S	176.7W	279		5.4	5.90	5.02	FIJI IS	13
5	23	3	35	35	10.9S	163.3E	33		5.5	5.96	5.12	SOLOMON IS REGION	39
5	23	3	57	41	1.3S	80.7W	33		5.0	4.95	4.43	ECUADOR COAST	8
5	23	5	30	19	7.9S	115.3E	33			3.78	4.10	JAVA SEA	24
5	23	6	36	32	32.9N	115.5W	14	4.4	4.6	3.31	4.26	IMPERIAL CO CALIF	3
5	23	6	57	52	18.4N	145.2E	478		4.5	4.82	4.26	MARIANA IS	18
5	23	7	43	58	19.2N	64.6W	55		5.4	5.72	4.98	LEEWARD IS	7
5	23	7	48		11.2S	163.3E	17		4.8	4.40	4.53	SOLOMON IS	15
5	23	7	54	31	11.0S	163.2E	61		4.5	4.24	4.46	SOLOMON IS	39

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	23	8	41	55	20.7S	177.9W	477		5.1	5.83	5.20	FIJI IS	13
5	23	9	5	3	32.8N	115.6W	14	4.6	4.6	3.80	4.33	IMPERIAL CO CALIF	3
5	23	10	15	8	36.6N	30.0E	226		5.6	4.60	4.34	S OF TURKEY	30
5	23	10	43	31	36.9N	141.0E	39		5.7	4.78	4.50	E HONSHU COAST	19
5	23	11	8	49			33			3.69	3.50	LOCAL QUE 6.6	47
5	23	11	56	46	44.7S	75.7W	33		5.1	4.90	4.57	S CHILE COAST	9
5	23	12	9	12	20.0N	73.5W	33		4.6	4.57	4.25	WINDWARD PASSAGE	7
5	23	15	12	6	6.0N	126.1E	88		5.5	6.01	5.20	NEAR E MINDANAO COAST	22
5	23	15	53		32.5N	115.3W	14	4.8		4.55	4.20	BAJA CALIF NORTE	3
5	23	16	27	42	46.6N	152.3E	52		5.6	5.50	4.74	KURILE IS	19
5	23	18	21	18	14.5N	105.2W	33			4.74	4.16	OFF W MEXICO COAST	5
5	23	21	36	38	30.6S	178.0W	33					KERMADEC IS	12
5	23	21	37	36	52.1N	178.6W	60		4.4	4.34	4.10	ANDREANOF IS	1
5	24	6	10	7	17.0N	88.3W	33			4.53	4.20	OFF COAST EL SALVADOR	6
5	24	7	33	6	58.2N	135.8W	33			3.70	3.60	SE ALASKA	2
5	24	7	33	18	6.7N	82.1W	33		4.3	4.06	4.45	S PANAMA COAST	6
5	24	20	52	25	22.8S	179.6W	566		4.5	4.42	4.25	FIJI IS	12
5	24	21	25		37.1N	140.8E	52		5.7	4.63	4.50	E HONSHU COAST	19
5	24	21	19	5	24.5S	179.7E	649		4.6	4.69	4.40	FIJI IS	12
5	25	1	35	50	24.8N	121.9E	33		4.7	4.84	4.62	NEAR FORMOSA COAST	21
5	25	1	51	13	22.2S	66.1W	305		4.1	4.36	4.20	JUJUY PROV ARGENTINA	8
5	25	2	37	56	35.6N	139.7E	77		5.4	4.60	4.36	E HONSHU COAST	19
5	25	4	22	47	54.4N	164.6W	70			3.25	3.30	UNIMAK IS ALEUTIAN IS	1
5	25	7	35	4	51.7N	179.7E	83		4.8	4.77	4.53	RAT IS	1
5	25	7	57	2	23.8S	66.6W	210		4.9	4.75	4.70	SALTA ARGENTINA	8
5	25	8	41	10	42.7N	144.3E	80	6.5	5.4	5.45	4.99	NEAR E HOKKAIDO COAST	19
5	25	10	11	49	4.5S	129.2E	95		4.5	4.97	4.53	BANDA SEA	23
5	25	10	44	38	39.8N	104.7W	33			3.70	4.55	COLORADO	34
5	25	14	52	12	11.9N	89.6W	33		4.4	4.09	3.90	EL SALVADOR COAST	6
5	25	16	8	1	56.8S	25.0W	29	6.2		5.92	5.37	SANDWICH IS	10
5	25	16	45	46	20.7N	120.9E	33		4.5	4.74	4.71	S OF FORMOSA	21
5	25	19	57	28	31.8N	141.3E	111		4.5	4.67	4.44	S HONSHU	18
5	25	22	10	25			33			3.48	4.70	LOCAL BAG 4.8	22
5	25	22	18	17	37.1S	179.5E	33			3.38	4.00	NEW ZEALAND COAST	11
5	25	23	59	56	19.7S	174.3W	33		5.3	5.62	5.00	TUNGA IS	12
5	26		42	56	6.9S	155.6E	87		5.0	5.74	5.03	SOLOMON IS	15
5	26	1	13	42			33			3.18	4.50	LOCAL ARE 4.3	8
5	26	2	50	11	1.5S	127.3E	33			5.17	4.50	HALMAHERA	23
5	26	4	43	9	53.2N	159.8E	33			4.29	4.00	E KAMCHATKA COAST	19
5	26	4	52	23	51.5N	159.8E	33		5.3	4.58	4.25	KAMCHATKA COAST	19
5	26	9	36	42	17.9S	178.5W	33			5.14	4.80	FIJI IS	13
5	26	10	57	59	16.0S	173.8W	33		5.1	5.01	4.60	TUNGA IS	12
5	26	12	43	48	16.7S	72.2W	60		4.7	5.24	4.80	S PERU	8
5	26	18	32	48	22.5N	144.0E	33		4.7	5.03	4.46	VOLCANO IS	18
5	26	19	13	40	5.5S	81.2W	33		4.7	4.99	4.76	NEAR PERU COAST	8
5	26	19	24	42	15.0S	35.2E	33		5.0	4.80	4.86	MOZAMBIQUE	37
5	26	21	2	19	48.5N	156.4E	33			3.91	3.70	KURILE IS	19
5	26	21	3	49	47.3N	48.6E	33		5.3	3.47	3.95	CASPIAN SEA	29
5	26	23	6	55	55.2N	159.9E	47	5.7	5.3	5.66	4.94	NEAR E KAMCHATKA COAST	19
5	26	23	34	49	7.2S	128.8E	293		4.5	4.93	4.60	BANDA SEA	24
5	27		30	52	10.6S	162.9E	129		4.2	4.07	4.03	SOLOMON IS	15
5	27	3	58	48	55.3N	160.1E	54	5.9	5.7	6.10	5.37	NEAR E KAMCHATKA COAST	19
5	27	7	2	27	54.3N	159.8E	33		4.3			E KAMCHATKA COAST	19
5	27	9	25	11			33			3.26	4.50	LOCAL ATU 4.4	30
5	27	16	5	13	12.2N	102.2W	33					MEXICO COAST	5
5	27	16	20	10	.6S	130.1E	33		5.0	4.92	4.60	HALMAHERA	16
5	27	18	45	36	1.8S	139.0E	33		5.2	4.96	4.88	NW IRIAN COAST	16
5	27	21	53	44	18.9S	69.5W	110		4.6	3.97	4.20	CHILE-BOLIVIAN BORDER	8
5	28		8	55	51.7N	177.7E	60		5.1	5.06	4.82	ANDREANOF IS	1

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
5	28	1	15	48	32.5N	142.5E	68			4.21	4.50	S OF HONSHU JAPAN	19
5	28	1	23	10	26.2N	125.5E	33		4.5	4.95	4.52	RYUKYU IS	20
5	28	?	?	58	23.6S	179.2W	33		4.6	5.02	4.15	FIJI IS	12
5	28	7		55	18.6S	177.8W	602		4.4	5.74	4.70	FIJI IS	12
5	28	8	22	21	5.8N	71.9W	33		4.8	5.19	4.90	COLOMBIA	7
5	28	10	32	48	35.5N	49.6E	33		4.3	2.68	4.00	W IRAN	29
5	28	16	29	12	44.3N	114.8W	33					IDAHO	34
5	28	20	6	59	32.6S	70.4W	36					CHILE	8
5	28	21	4	10	47.5N	152.4E	120	6.1	4.9	5.88	5.07	KURILE IS	19
5	28	21	38	50	12.5N	142.1E	33		4.5	4.94	4.65	MARIANA IS	17
5	28	21	58	28	36.1N	140.7E	78		4.9	4.87	4.81	NEAR E HONSHU COAST	19
5	29		47	50	28.3N	52.2E	45	5.8	5.0	5.32	5.14	W IRAN	29
5	29	1	2	6	18.1S	178.0W	472		4.4	5.25	4.76	FIJI IS	12
5	29	4	29				33			3.42	4.40	LOCAL PMG 5.1	16
5	29	4	50	18	57.4N	154.0W	55		4.8	4.87	4.26	KODIAK IS ALASKA	1
5	29	5	37	12			33			3.54	4.70	LOCAL NNA 5.3	8
5	29	8	27	44	17.7S	178.8W	472		4.5	4.80	4.55	FIJI IS	12
5	29	8	35	2	27.2N	59.3E	33		5.4	5.60	4.99	S IRAN	29
5	29	10	30	56			33			4.20	5.10	LOCAL ATU 6.3	30
5	29	10	59	10	18.0S	178.0W	550		4.8	5.43	4.82	FIJI IS	13
5	29	13	4	8	22.1S	169.6E	33			3.05	3.50	NEW HEBRIDES	14
5	29	13	22	23	23.9S	179.2W	60		4.8	5.37	4.90	FIJI IS	12
5	29	18	2	22	16.3S	174.3W	64		4.7			TONGA IS	12
5	29	18	27	19	22.6S	114.4W	33		4.7	4.74	4.50	EASTER IS	43
5	29	18	30	25	24.4S	114.7W	33		4.5			EASTER IS	43
5	29	22	41	34	14.7N	92.1W	33		4.4	4.20	4.05	MEXICO-GUATEMALA	5
5	30	1	54	55	27.7N	2.5W						SPAIN	31
5	30	1	56	41	6.4N	72.9W	132		3.9	3.71	3.70	COLOMBIA	7
5	30	3	4	50	18.3S	178.3W	450		4.2	4.17	4.03	FIJI IS	13
5	30	3	44	50	49.9N	157.3E	50		4.8	4.98	4.65	KURILE IS	19
5	30	5	10	5	41.9N	133.8E	33		4.4	5.35	4.70	SEA OF JAPAN	41
5	30	5	35	6	26.1S	178.3E	610		4.9	5.29	4.94	FIJI IS REGION	12
5	30	6	56	9	54.2S	143.7E	33	5.4		5.10	4.79	S OF AUSTRALIA	45
5	30	11	33	1	23.9N	46.1W	33			4.08	3.95	N ATLANTIC OCEAN	32
5	30	16	27	47	30.1N	111.5W	33			2.10	3.80	SONORA MEXICO	34
5	30	17	1	21	28.9N	141.5E	39			5.16	4.80	BONIN IS	18
5	30	17	39	42	52.4N	169.5W	80		4.6	4.58	4.40	FOX IS ALLUFIANS	1
5	30	18	57	53	59.4S	26.9W	33			5.48	5.05	SANDWICH IS	10
5	30	20	8	22			33			3.63	4.80	LOCAL ATU 3.4	30
5	30	20	30	28	22.6S	176.2W	60		5.0	5.67	5.15	TONGA IS	12
5	30	1	21	50	45.0N	111.1W	33					YELLOWSTONE PARK	34
5	31	3	36	6	46.1N	14.8E	25					YUGOSLAVIA	36
5	31	4	29	34	16.5S	69.3W	136		4.5	4.96	4.75	S PERU	8
5	31	5	29	30	55.2N	160.0E	61		4.7	4.75	4.42	E OF KAMCHATKA	19
5	31	6	3	35	15.1S	173.3W	33		4.8	5.49	4.80	TONGA IS	12
5	31	11	9	3	61.5N	140.6W	33		3.8	2.98	3.20	SW YUKON	1
5	31	11	37	56	44.9N	111.4W	33					SW MONTANA	34
5	31	12		28	20.1S	175.9W	136		4.4	5.37	4.90	TONGA IS REGION	12
5	31	14	8	3	30.6S	178.1W	60		4.5	5.25	4.72	KERMADEC IS	12
5	31	21	53	46	11.2N	91.2W	33		4.0	3.12	3.40	OFF EL SALVADOR COAST	5
5	31	22	5	2			33			3.34	4.30	LOCAL QUE 7.4	47
5	31	22	58	50	15.1S	173.4W	33		5.4	5.41	4.80	SAMOA IS	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	1	2	7	38	46.7N	152.4E	33		4.9	4.64	4.53	KURILE IS	19
6	1	9	23	19	20.3S	176.5W	33			4.45	4.45	TONGA IS	12
6	1	10	49	55	36.4N	71.5E	70	6.0	5.1	5.71	5.07	HINDU KUSH	48
6	1	12	30	55	15.0S	172.4W	33		5.1	5.32	4.62	TONGA IS	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	1	14	37	2	15.1S	72.0W	122					S PERU	8
6	1	18	24	7	49.7N	109.7E	33		5.0	4.52	4.40	CHITA REGION USSR	28
6	1	19	36	4	.1N	123.1E	145			3.59	3.90	CELEBES	23
6	1	20	8	34	14.9N	119.7E	33		4.8	4.61	4.48	W LUZON PI COAST	22
6	1	20	36	9	39.0N	15.0E	285		4.4	4.01	4.25	MEDITERRANEAN SEA	31
6	1	21	8	17	22.2S	169.6E	35		4.8	5.01	4.37	LOYALTY IS	14
6	1	21	13	53	15.2S	173.5W	33	5.9	5.5	5.60	4.97	SAMOA IS	12
6	1	22	17	54	28.3N	139.1E	524		4.4	4.47	4.37	S OF HONSHU JAPAN	18
6	1	23	44	53	21.4S	169.2E	18			3.71	3.90	LOYALTY IS	14
6	2	1	16	31	17.7N	94.2W	164		4.3	4.72	4.56	VERA CRUZ MEXICO	5
6	2	7	7	58	27.8N	95.6E	143		4.9	3.98	4.12	ASSAM INDIA	26
6	2	10			6.1S	154.4E	49	5.6	5.8	5.82	5.02	SOLOMON IS	15
6	2	17	58	9	53.8N	163.7W	36		4.1	5.17	4.66	ALASKA PENINSULA	1
6	2	21	4	24	58.5S	15.6W	50	6.2	5.9	6.30	5.55	SANDWICH IS	10
6	2	21	7	14	32.8S	179.0W	56		5.1	5.48	4.88	NEAR KERMADEC IS	12
6	2	22	22		13.8N	90.8W	68		5.1	5.12	4.47	GUATEMALA COAST	5
6	2	22	26	20	8.2N	74.8W	37		4.8	4.93	4.88	COLOMBIA	7
6	3	4	44	12	19.1S	177.8W	510		3.5	4.43	4.30	FIJI IS	13
6	3	5	27	8	16.4N	100.3W	33					MEXICO COAST	5
6	3	5	47	17	46.8N	152.9E	80		4.4	4.01	3.80	KURILE IS	19
6	3	7	18	6	21.0S	175.6W	37		4.8	5.18	4.80	TONGA IS	12
6	3	7	20	8	40.0N	143.1E	26		4.5	4.79	4.58	E HONSHU COAST	19
6	3	7	35	54	34.2N	138.7E	43	5.9	5.3	5.67	4.96	HONSHU JAPAN	19
6	3	9	44	36	39.9N	144.9E	33		4.1	4.18	4.30	E HONSHU JAPAN	19
6	3	11	31	49	5.3N	72.9W	21	5.0	5.0	5.46	4.93	COLOMBIA	7
6	3	12	18	26	2.8N	72.7W	33					COLOMBIA	8
6	3	12	34	42	39.2N	70.6E	33		4.7	4.54	4.46	TADZHIK USSR	48
6	3	12	44	1	30.0S	66.2W	224		3.6	4.18	4.70	ARGENTINA-CHILE	8
6	3	14	25	37	15.3N	91.5W	33		4.2	3.84	3.90	GUATEMALA	5
6	3	14	42	50	4.4S	102.5E	48			4.61	4.60	S SUMATRA COAST	24
6	3	18	48	55	29.5S	177.8W	49		5.5	5.58	4.20	NEAR KERMADEC IS	12
6	3	21	30	13	59.5S	27.7W	45		5.6	5.48	4.83	SANDWICH IS	10
6	4		1	18	3.4S	135.6E	44		5.3	4.44	4.37	W NEW GUINEA	16
6	4	3	15	17	6.9S	124.8E	408		4.3	3.84	4.06	BANDA SEA	24
6	4	11	44	12	8.1N	126.8E	161		5.0	4.79	4.57	E MINDANAO PI	22
6	4	11	54	9	30.5S	177.8W	33		5.1	5.72	5.18	KERMADEC IS	12
6	4	13	5	56	30.4S	177.6W	33		5.2	5.51	5.10	KERMADEC IS	12
6	4	14	44	5	4.8S	129.9E	188		4.9	4.97	4.82	BANDA SEA	23
6	4	16	4	10	38.1N	121.0E	33			4.55	4.37	YELLOW SEA REGION	41
6	4	19	21	56	18.9N	146.2E	110		5.5	6.27	5.42	MARIANA IS	18
6	4	20	29	3	19.2N	97.0W	152		4.2	4.50	4.20	VERA CRUZ MEXICO	5
6	4	21	4	42	1.2S	127.3E	31	6.1	5.2	6.03	5.05	HALMAHERA	23
6	4	22	11	32	39.0N	20.6E	33		4.7	4.28	4.30	GREECE	30
6	4	23	55	31	33.1S	76.7E	33			5.26	4.63	INDIAN OCEAN	33
6	4		13	51	39.3N	104.0W	33		4.4	2.15	3.50	COLORADO	34
6	5	1	2	36			33			4.21	5.10	LOCAL PMG 7.5	16
6	5	5	7	4	30.7S	177.6W	70		4.6	4.97	4.45	NEAR KERMADEC IS	12
6	5	5	32	9	34.6S	81.5E	33			4.64	4.40	INDIAN OCEAN	33
6	5	8	50	21	19.7S	177.8W	528			4.20	4.55	FIJI IS	13
6	5	9	11	50	31.2N	142.6E	33		4.8	5.51	4.96	SE OF HONSHU JAPAN	18
6	5	10	12	9	14.9S	166.8E	37		5.0	4.91	4.65	NEW HEBRIDES IS	14
6	5	11	20	7	3.6S	149.6E	33		5.1	5.04	4.56	BISMARCK SEA	16
6	5	12	46	5	6.9S	73.0W	148		4.7			PERU-BRAZIL	8
6	5	14	7	38	17.2S	176.7W	33		4.8	4.84	4.80	TONGA IS	12
6	5	14	47	22	28.7S	178.8W	194		4.1	4.31	3.90	KERMADEC IS	12
6	5	22	41	2	2.9S	119.7E	63		4.6	3.96	4.17	CELEBES	23
6	5	22	54	29	3.0S	119.5E	75		5.2	5.24	4.60	CELEBES	23
6	6	5	18	55	19.9N	120.2E	33	6.2	5.8	6.58	5.65	OFF N LUZON PI	21
6	6	6	7	22	20.1N	120.4E	33		5.2	5.41	4.95	OFF N LUZON PI	21
6	6	8	5	36	36.5N	104.3W	33		3.8	2.28	3.00	N NEW MEXICO	34

MO	DA	HR	MN	SEC	LAT	LONG	DLP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	6	8	21	12	6.7N	94.7E	33		5.5	5.95	5.30	NICOBAR IS	24
6	6	10	15	36			33			3.21	4.40	LOCAL NNA 3.5	8
6	6	11	25	18	30.5S	177.7W	110		4.4	5.13	4.80	KERMADEC IS	12
6	6	12	4	14	37.8S	77.9E	33		5.3	5.25	5.00	NE KERGUELEN IS	33
6	6	17	42	47	14.3S	167.3E	160		4.7	5.77	5.28	NEW HEBRIDES	14
6	6	23	43	17	25.4S	180.0E	369		4.5	4.75	4.90	FIJI IS	12
6	7		20	54	23.9S	66.6W	206		5.2	4.51	4.53	JOJOY PROV ARGENTINA	8
6	7	12	4	40	36.0N	122.0W	14	4.5	4.3			CALIFORNIA	3
6	7	15	24	48	15.3S	178.9W	33		4.9	4.91	4.82	FIJI IS	13
6	7	15	49	57	19.0N	121.8E	33	5.5	5.2	5.55	4.96	OFF N LUZON PI	21
6	7	19	30	36	8.5N	103.1W	33	5.7	4.9	5.03	4.61	CLIPPERTON IS	44
6	7	21	28	47	8.8N	102.5W	33		4.6	5.25	4.70	CLIPPERTON IS	44
6	7	22	31	51	15.2S	173.1W	33		4.5	6.09	5.33	SAMOA IS	12
6	7	22	47	1	15.3S	173.2W	33		5.0	5.85	5.11	SAMOA IS	12
6	7	1	1	52	15.1S	173.0W	33		4.6	4.87	4.40	SAMOA IS	12
6	7			32	23.2S	171.3E	47		4.3	3.60	4.00	LOYALTY IS	12
6	7	4	22	54	22.7S	13.7W	33		4.9	4.71	4.62	S ATLANTIC OCEAN	32
6	7	5	24		5.5S	147.0E	170		5.1	4.92	5.23	CELEMON IS	19
6	7	8	1	56	47.6N	124.3W	13					N CALIFORNIA	3
6	7	8	47	21	2.4S	77.6W	33		4.4	4.85	4.37	PERU-ECUADOR	8
6	7	12	46		5.9N	13.5W	145		4.7	5.08	4.60	NE COLOMBIA	7
6	7	13	34	23	53.4N	153.6W	175		3.9	5.16	4.50	S ALASKA	1
6	7	19	52	46	16.1S	176.9W	542			4.59	4.50	FIJI IS	12
6	7	22	58	32	14.5S	174.0W	33		4.4	4.72	3.70	SAMOA IS	12
6	7		53	1	27.3N	136.0E	207			4.89	4.45	BONIN IS	18
6	7	1	52	32	23.5S	176.2W	33		4.5	5.43	5.05	TONGA IS	12
6	7	1	52	17			33			3.57	4.70	LOCAL QUE 7.9	47
6	7	3	47	56	17.5N	158.0E	33		4.0	4.10	4.30	NEW HEBRIDES IS	14
6	7	1	58	10			33			3.12	4.00	LOCAL NNA 3.7	8
6	7	7	5	29	51.3S	175.8E	70		4.5	5.27	4.63	KAT IS	1
6	7	7	42	20	12.7S	166.9E	237		4.3	4.80	4.60	SANTA CRUZ IS	14
6	7	8	2	24	6.3N	126.1E	105		4.9	4.91	4.67	MINDANAO PI COAST	22
6	7	8	35		77.9N	3.2E	57		4.7			SVALBARD REGION	40
6	7	15	5	31	19.1S	152.4W	33		4.5	4.92	5.00	SAMOA IS	12
6	7	20	37	57	10.7N	11.9W	33		5.0	5.25	4.87	ATLANTIC OCEAN	32
6	7	4	16	38	55.4S	146.4E	33	5.1	6.1	6.46	5.58	W MACQUARIE IS	45
6	7	5	2	35	18.6S	152.3E	240		4.7	3.93	4.00	OFF NEW HEBRIDES	14
6	7	5	14	16	55.2S	146.3E	33			5.20	5.05	W MACQUARIE IS	45
6	7	5	39	6	55.3S	146.1E	18	6.3	6.0	6.37	5.62	W MACQUARIE IS	45
6	7	5	44	24	51.5N	178.5W	33		4.7	5.02	4.62	ANDRANOF IS	1
6	7	5	58		5.1N	170.2E	33	5.7	5.1	5.66	5.08	KAMCHATKA COAST	19
6	7	11	17	51	4.5S	152.0E	174		5.2	5.17	4.85	NEW BRITAIN	15
6	7	18	52		5.1S	151.7E	112		4.9	5.00	4.85	NEW BRITAIN	15
6	7	22	54	44	4.5S	152.8E	69		5.2	5.80	5.04	NEW BRITAIN	15
6	7		55	53			33			3.52	4.70	LOCAL QUE 8.2	47
6	7		26	41	37.1N	70.3E	38	5.4	5.3	5.56	5.25	HINDU KUSH	48
6	11	4	15	49	59.8N	153.0W	50		4.7	4.53	3.95	COOK INLET	1
6	11	13	8	31	53.1N	151.4W	31			5.11	4.53	CENTRAL ALASKA	1
6	11	15	23	42	31.8N	116.2W	33	5.0	5.2	4.90	4.80	BAJA CALIFORNIA	3
6	11	17	13	11	23.1S	179.8W	550		4.1	5.29	4.93	FIJI IS	12
6	11	17	13	36	23.2S	179.7W	550		4.4	5.92	5.25	FIJI IS	12
6	11	18	7	24	30.7N	86.9E	33		4.5	4.69	4.34	TIBET	26
6	11	18	34	24	37.7N	69.4E	200		4.1	5.12	4.50	HINDU KUSH	48
6	11	18	34	31	4.9N	77.5W	33		4.4	4.90	4.78	W COLOMBIA COAST	6
6	12	2	50	59	30.8N	142.0E	33		4.4	4.79	4.65	S HONSHU	18
6	12	3	28	19	8.9N	126.5E	33			5.13	4.75	E MINDANAO PI	22
6	12	4	8	12	15.8S	174.2W	150		4.4	5.02	4.74	SAMOA IS	12
6	12	13	2	48	17.0S	173.4W	33		4.2	3.70	3.80	TONGA IS	12
6	12	15	11	59	55.8S	17.8W	33			5.73	5.30	SANDWICH IS	10
6	12	19	24	37	46.1N	14.8E	30					YUGOSLAVIA	36

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	17	22	15	15	31.6N	116.3W	33			3.41	4.55	LOWER CALIFORNIA	4
6	13	1	27	11			33			4.43	5.10	LOCAL PMG 5.3	16
6	13	5	14	27	15.2S	173.3W	33	4.9	4.83	4.52		SAMOA IS	12
6	13	5	30	41	22.8S	67.3W	33	4.3	5.61	5.00		CHILE-BOLIVIA	8
6	13	8	37	40	38.7N	14.8E	33	4.4	4.39	4.32		N SICILY COAST	30
6	13	10	34	52	6.1S	130.1E	150		5.57	5.12		BANDA SEA	16
6	13	16	59	11	33.3S	71.3W	94		4.78	4.52		CHILE COAST	8
6	13	17	26	41	4.6S	153.2E	54	5.0	5.43	4.85		NEW BRITAIN	15
6	13	22	23	34	11.7S	65.0E	33		4.67	4.46		NW INDIAN OCEAN	33
6	14	7	18	50	15.0N	93.1W	33	3.7	3.76	3.73		CHIAPAS MEXICO	5
6	14	7	23	16	16.4N	94.6W	33	4.2	4.83	4.36		CHIAPAS MEXICO	5
6	14	8	6	37	12.7N	143.5E	27	4.5	3.71	4.00		MARIANA IS	17
6	14	8	19	16	14.6N	93.4W	33	4.0	4.38	3.90		CHIAPAS MEXICO	5
6	14	15	37	1	75.7N	24.0E	33	4.4	2.56	4.10		SVALBARD	40
6	14	16	30	46	17.9S	178.5W	587	4.2	4.61	4.60		FIJI IS	13
6	14	19	23	52	38.7S	146.0E	33					S AUSTRALIA COAST	38
6	14	21	41	17			33		4.43	5.00		LOCAL PMG 6.3	16
6	14	22	51	53					3.09	3.90		LOCAL PMG 1.4	16
6	14	23	37	49	50.8N	129.6W	33	4.1	3.91	3.85		OFF VANCOUVER	2
6	15	2	20	12	53.2N	167.0W	33	4.3	4.34	4.05		FOX IS ALEUTIANS	1
6	15	5	1	52	15.0S	177.8W	350	4.6	4.67	4.90		FIJI IS	13
6	15	12	52	3	51.0N	179.9E	33	4.2	4.32	4.00		RAT IS ALEUTIANS	1
6	15	13	15	53	45.0N	110.8W	33	4.1				YELLOWSTONE PARK	34
6	15	15	30	38	36.3S	98.9W	33	4.9	5.16	4.84		WEST OF CENTRAL CHILE	43
6	15	21	47	12	55.7S	28.5W	33		5.36	5.00		SANDWICH IS	10
6	15	23	14	20			33		4.50	5.20		LOCAL PMG 6.2	16
6	16	2	53	24	44.3N	135.5E	438	4.0	4.02	4.00		SEA OF JAPAN	46
6	16	3	35	53	22.7S	176.3W	70	4.2	5.82	5.20		TONGA IS	12
6	16	4	43	49	42.7N	142.0E	80	4.0	4.84	4.45		HOKKAIDO JAPAN	19
6	16	6	27	15	16.6N	100.3W	33	4.2	4.74	4.35		GUERRERO MEXICO COAST	5
6	16	9	19	55	50.8N	129.5W	33	4.4	4.38	4.28		VANCOUVER IS	2
6	16	13	49		4.5S	153.0E	72	5.7	5.08	4.87		NEW IRELAND	15
6	16	17	27	19	52.2N	179.2E	139	4.0	4.30	4.00		RAT IS	1
6	16	18	9	13	15.2N	61.4W	157	4.0	4.05	3.80		WINDWARD IS	7
6	16	22	36	46	22.9S	64.0W	40	4.7	4.75	4.30		ARGENTINA	8
6	17	2	4	56	17.7S	178.5W	515	3.2	5.02	5.00		FIJI IS	13
6	17	2	6	10	15.9S	177.9W	33	4.4	6.03	5.50		FIJI IS	12
6	17	10	17	15	44.0N	85.3E	33		4.12	4.16		SINKIANG CHINA	27
6	17	10	23		44.9N	150.6E	33	4.2	3.87	4.05		KURILE IS	19
6	17	10	25	32	45.5N	150.4E	33	4.0				KURILE IS	19
6	17	17	37	22	20.3S	177.2W	529	3.4	4.01	4.35		FIJI IS	12
6	17	18	30	54	65.8S	179.5W	33	6.2	5.98	5.20		SCOTT IS	50
6	17	18	32	14	60.4N	140.8W	33	5.4	5.1	5.67		SW YUKON	1
6	17	20	8	37	20.4S	174.4W	33	4.9	5.82	5.11		TONGA IS	12
6	17	23	2	7	4.1S	102.2E	73	6.2	6.1	6.29		S SUMATRA COAST	24
6	18	1	16	8			33		4.20	5.10		LOCAL PMG 6.3	16
6	18	4	2	31	20.0N	129.9E	33	5.7	5.5	6.02		RYUKYU IS	18
6	18	5	18	57			33		3.43	4.20		LOCAL NNA 2.4	8
6	18	8	37	58	36.3N	70.7E	223	4.4	3.65	4.20		HINDU KUSH	48
6	18	9	30	47	15.7S	168.0E	176		4.50	4.40		NEW HEBRIDES IS	14
6	18	13	9	34	18.3N	71.0W	33	4.0	4.23	3.70		DOMINICAN REPUBLIC	7
6	18	15	39	55	5.3S	78.5W	33	4.4	3.83	4.47		N PERU	8
6	18	16	54	6	19.6N	65.6W	33	4.0	4.6	4.72		N OF PUERTO RICO	7
6	18	23	14	24	12.6N	124.2E	16	4.6	4.64	4.51		S LUZON PI	22
6	17	2	15	54	23.6S	174.9W	55	4.3	4.71	4.46		TONGA IS	12
6	17	5	43	49	63.4N	151.3W	60	4.1				ALASKA	1
6	19	8	38	47	37.9N	112.5W	36	4.2	2.73	3.70		S UTAH	34
6	19	9	9	4	4.7N	125.6E	83	6.0	6.2	6.89		TALAUD IS REGION	23
6	19	10	47	25	25.0N	92.1E	51	6.0	5.7	6.23		ASSAM INDIA	26
6	19	11	30	50	44.9N	129.4W	48	4.4	3.51	3.70		W OF OREGON	3

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	19	11	58	55	0.35	158.8E	33		5.5	5.60	5.24	SOLOMON IS	15
6	19	17	46	2	63.2N	146.3W	33		4.4	4.70	4.40	ALASKA	1
6	19	18	22	10	3.55	153.4E	279		5.1	5.34	5.05	NEW IRELAND	15
6	19	23	1	52	31.5N	140.3E	38	5.5	5.0	5.64	4.97	S HONSHU	18
6	20		56	4	36.3N	144.5E	33		5.1	5.43	4.82	E HONSHU COAST	19
6	20	3	34	18	12.5N	89.2W	75		3.9	4.93	4.37	EL SALVADOR COAST	6
6	20	4	45	50			33			3.27	3.50	LOCAL GSC 4.9	3
6	20	10	23	18	7.65	76.4W	135		3.9	4.13	4.00	PERU-BRAZIL	8
6	20	12		5	31.6N	140.2E	33		4.1	4.43	4.70	S OF HONSHU JAPAN	18
6	20	14	59	43	30.2N	114.1W	14		4.5			CALIFORNIA GULF	4
6	20	19	47	41	35.8N	3.6W	54	4.2	4.6	4.45	4.38	W MEDITERRANEAN	31
6	20	20	42	17	2.35	77.4W	33		4.1	4.12	4.33	ECUADOR	8
6	20	22	46	18	27.9S	176.6W	41		5.2	5.98	5.20	KERMADEC IS	12
6	20	23	15	43	52.7N	168.6W	33		4.1	5.62	5.00	FOX IS	1
6	21	3	32	41	10.5N	85.9W	82		4.6	4.53	4.30	W COSTA RICA COAST	7
6	21	4	2	56	15.2N	91.9W	218		4.0	4.98	4.60	GUATEMALA-MEXICO	5
6	21	6	2	50	43.3N	17.0E						YUGOSLAVIA	36
6	21	12	13	13	4.95	81.3W	33		4.1	4.11	4.43	PERU COAST	8
6	21	12	18	27	24.75	66.6W	221		5.1	5.33	4.77	ARGENTINA	8
6	21	13	5	53	15.15	173.3W	33		4.3	4.60	4.30	SAMOA IS	12
6	21	13	44	25	47.9N	130.3E	33	5.6	4.9	5.38	4.83	E MANCHURIA	41
6	21	14	1	10	12.75	167.4E	275		4.6	3.88	4.40	SANTA CRUZ IS	14
6	21	14	31	15	2.7N	128.6E	217			4.71	4.60	HALMAHERA	23
6	21	15	26	31	25.2N	92.2E	55	6.4	5.6	5.91	5.28	E INDIA	26
6	21	17	42	36	27.9N	176.2W	33		4.7	4.17	4.75	KERMADEC IS	12
6	21	21	42	1	29.75	177.4W	43		4.8	5.39	4.80	KERMADEC IS	12
6	22	4	47	22	6.15	154.4E	64		4.9	5.08	4.72	SOLOMON IS	15
6	22	8	35	14	41.15	90.2W	33		4.6	4.84	4.50	W OF CHILL	43
6	22	12	24	56	15.15	172.7W	50		4.2	5.16	4.65	TONGA IS	12
6	22	16	12	14	6.05	113.1E	595		5.1	5.11	4.85	JAVA SEA	24
6	22	16	21	41	36.45	67.8W	202		4.3	3.35	4.00	SAN JUAN ARGENTINA	8
6	22	20	51	57	52.9N	121.3E	33		4.5	4.63	4.57	NW MANCHURIA	41
6	22	21	27	53	30.1N	177.2W	33		4.4	5.49	5.00	KERMADEC IS	12
6	23	4	49	34	29.6N	177.7W	55		5.0	5.63	5.13	KERMADEC IS	12
6	23	8	52	10	6.05	146.6E	61		5.3	5.34	5.11	NW GUINLA	16
6	23	9	3	49	37.7N	141.7E	39		4.5	4.75	4.56	E HONSHU COAST	19
6	23	9	33	53	45.6N	14.0E	33		4.3	3.87	4.15	YUGOSLAVIA	36
6	23	10	1	49	9.05	113.1E	157			4.52	4.47	S JAVA COAST	24
6	23	11	7	41	23.05	66.7W	274		4.1	3.90	4.40	ARGENTINA	8
6	23	12	5	19	21.0N	108.2W	33		3.9	3.75	4.90	W OF CENTRAL MEXICO	4
6	23	13	11	28	52.1N	131.3W	33		3.9	4.05	3.95	QUEEN CHARLOTTE I	2
6	23	14	27	11	12.3N	140.7E	42		4.9	5.01	4.85	MARIANA IS	17
6	24	1	21	4	15.35	69.4W	179		4.0	2.82	4.30	PERU-BOLIVIA	8
6	24	2	59	17	10.65	163.3E	58		4.7	3.81	4.42	SOLOMON IS	15
6	24	4	26	38	59.5N	151.7W	52	6.6	5.7	6.76	5.33	COOK INLET ALASKA	1
6	24	5	43	48	59.4N	151.4W	57		4.7	4.64	4.13	COOK INLET ALASKA	1
6	24	6	19	7	59.2N	152.0W	33		3.9	3.95	3.40	COOK INLET ALASKA	1
6	24	6	50	42	59.3N	152.7W	40		3.9	4.28	3.96	COOK INLET ALASKA	1
6	24	10	17	2	52.8N	131.0W	28		3.9	4.35	4.10	QUEEN CHARLOTTE IS	2
6	24	13	18	8	25.55	175.6W	238		4.6	5.31	4.90	TONGA IS	12
6	24	14	18	29	59.0N	136.0W	33		3.9	4.48	4.10	SE ALASKA	2
6	24	15	1	44	15.55	177.5W	412		5.0	4.83	4.71	FUJI IS	12
6	24	16	17	15	52.3N	171.2W	33	5.6	5.4	5.92	5.11	FOX IS	1
6	24	16	25	58	52.4N	171.2W	34		4.2	4.97	4.60	ANDREANOF IS ALBERTA	1
6	24	16	52	6	52.3N	171.2W	33		4.5	4.25	4.05	FOX IS	1
6	24	18	56	43	4.65	101.8E	33			4.67	4.55	S SUMATRA COAST	24
6	24	23	10	30			33			3.38	4.50	LOCAL SHL 7.1	26
6	25	2	29	26	19.95	177.5W	566		4.1	5.38	4.93	FUJI IS	12
6	25	2	47	3	7.25	154.8E	207		4.8	3.89	4.70	SOLOMON IS	15
6	25	8	26	21	44.3N	129.1W	31		4.5	3.98	3.86	W OF OREGON	3



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LUCATION	REG
6	25	9	39	28	44.3N	129.1W	32		4.5	4.29	3.93	W OF OREGON	3
6	25	10	45	32	15.9S	75.3W	34		4.2	4.10	4.15	PERU COAST	8
6	25	11	43	41	8.7N	82.9W	37		4.4	5.03	4.77	PANAMA-COSTA RICA	6
6	25	14	32	14	8.4S	106.5E	78		5.4	5.59	5.15	S JAVA COAST	24
6	25	15	51	49	44.0N	110.0W	33		4.2	2.31	3.60	YELLOWSTONE PARK	32
6	25	16	4	19	20.4S	176.1W	250		4.3	6.00	5.35	TONGA IS	12
6	25	17	42	03	50.7N	7.4E						GERMANY	36
6	25	22	16	11	50.6N	7.3E						GERMANY	36
6	26		59	8	7.1N	82.2W	33		4.4	4.02	4.32	S OF PANAMA	6
6	26	1	33	52	32.7S	71.5W	93		4.1	4.00	4.05	S CHILE	8
6	26	4	40	28	55.3N	160.4E	33		4.4	4.54	4.55	KAMCHATKA	19
6	26	5	48	53	42.0N	23.7E						BULGARIA	30
6	26	7	55	41	11.5N	143.0E	48		4.8	4.74	4.68	MARIANA IS	17
6	26	8	33	18	38.9N	142.0E	33		4.2	4.40	4.27	N HONSHU COAST	19
6	26	9	41	31	4.6N	126.3E	33		4.9	5.33	4.95	MINDANAO PI	22
6	26	10	27	3	35.3N	3.7W	33		4.6	4.06	4.25	W MEDITERRANEAN	31
6	26	14	9	13	36.4N	76.9E	33		5.3	6.53	5.55	SINKIANG CHINA	48
6	26	14	22	48	5.9N	72.7W	33		4.6	5.15	4.65	COLOMBIA	7
6	26	16	51	41	23.5S	177.0W	33		4.6	5.61	4.96	FIJI IS	12
6	26	17	21	56	24.2N	95.2E	80		5.4	4.62	4.50	N BURMA	25
6	26	17	42	40	7.1N	82.3W	20	6.0	6.0	6.21	5.41	S PANAMA COAST	6
6	27		6	13	18.5S	177.7W	397		3.9	4.13	4.65	FIJI IS	12
6	27		11	41	44.9N	6.6E						FRANCE	31
6	27		15	56	44.9N	6.6E						FRANCE	31
6	27	1	4	28	44.9N	6.6E						FRANCE	31
6	27	3	11	40	25.6S	64.6W	60		4.5	5.55	4.60	ARGENTINA	8
6	27	3	49	58			33			3.26	3.70	LOCAL PMG 5.2	16
6	27	7	8	1	60.5N	140.7W	29		4.6	5.07	4.64	YUKON TERRITORY	1
6	27	7	23	16	23.2S	177.1W	338		4.2	4.92	4.45	FIJI IS	12
6	27	8	12	57	15.6S	172.9W	33		4.5	5.59	5.00	TONGA IS	12
6	27	10	29	14	44.3N	12.3E						N ITALY	31
6	27	11	46	58	8.3S	111.2E	180			4.89	4.61	JAVA COAST	24
6	27	12	21	25	30.1S	177.7W	44		4.8	5.48	4.97	KERMADEC IS	12
6	27	13	15	16	11.6S	77.4W	33		4.1	4.44	4.60	PERU	8
6	27	15	8	9	39.1N	140.7E	114		4.0	4.55	4.20	N HONSHU	19
6	27	15	32	53	14.4N	93.7E	33		5.2	5.28	4.95	ANDAMAN IS	24
6	27	18	31	37			33			3.75	4.70	LOCAL PMG 4.2	16
6	27	20	14				33			3.27	4.60	LOCAL QUE 7.2	47
6	27	23	25	3	48.0N	152.9E	109		4.2	5.39	4.93	KURILE IS	19
6	28		33		16.8N	96.0W	33		3.6	3.70	3.70	UAXACA MEXICO	5
6	28	2	28	51	27.5S	66.1E	33	6.3	6.0	6.17	5.48	INDIAN OCEAN	33
6	28	4	36	24	43.7N	146.5E	29		4.3			KURILE IS	19
6	28	13	47	47	1.3N	97.4E	50	5.7	5.0	5.34	4.90	S OF N SUMATRA COAST	24
6	28	15	15	8	67.2N	18.7W	33		4.3	3.21	3.90	N ICELAND COAST	40
6	28	16	1	24	67.5N	18.7W	33		4.4	3.50	4.05	N ICELAND COAST	40
6	28	21	55	38	46.5N	153.7E	33	6.8	6.1	6.68	5.63	KURILE IS	19
6	28	22	15	28	46.6N	153.5E	33		4.6	4.62	4.55	KURILE IS	19
6	28	22	22	1	46.6N	153.7E	33		4.5	4.70	4.80	KURILE IS	19
6	28	22	25	4	46.7N	153.4E	33	6.3	5.1	5.80	5.35	KURILE IS REGION	19
6	28	22	49	34	46.6N	153.3E	33		4.3	4.88	4.60	KURILE IS	19
6	28	22	57	3	46.4N	153.4E	33	6.2	4.8	5.78	4.90	KURILE IS	19
6	28	23	16	56	4.7S	144.5E	83		4.8	4.83	4.94	NE NEW GUINEA COAST	16
6	28	23	53	56	46.4N	153.5E	33	6.5	5.3	5.97	5.35	KURILE IS	19
6	29	2	21	45	46.2N	153.5E	33	5.8	4.4	5.12	4.75	KURILE IS	19
6	29	4	7	10	46.0N	153.5E	33	5.7	4.5	4.80	4.52	KURILE IS	19
6	29	5	38	56	46.4N	153.3E	33		4.7	4.92	4.55	KURILE IS	19
6	29	8	9	28	40.3N	126.9W	33		4.2	4.58	4.56	N CALIFORNIA COAST	3
6	29	8	30	17	8.7S	119.8E	75			3.91	4.00	FLORES SEA	24
6	29	12	43	48	11.6N	142.7E	30		5.2	5.68	5.08	MARIANA IS	17
6	29	13	4	24	11.7N	142.8E	33		4.9	5.31	4.86	MARIANA IS	17

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
6	29	13	14	4	46.4N	153.7E	33		4.7	4.78	4.57	KURILE IS	19
6	29	14	29	56	46.1N	153.2E	33		4.4	4.86	4.60	KURILE IS	19
6	29	17	48	1	11.0S	163.5E	33		4.6	4.21	4.00	SOLOMON IS	15
6	29	18	42	14	46.3N	153.4E	33		4.9	5.05	4.61	KURILE IS	19
6	29	20	16	40	46.3N	153.5E	33		4.6	5.21	4.82	KURILE IS	19
6	29	20	19	34			33			3.17	4.50	LOCAL PMG 3.5	16
6	29	23		9	16.8S	172.9W	33		4.5	5.49	4.95	TONGA IS	12
6	31		4	47	35.4N	73.7E	35		4.4	3.47	3.90	MEDITERRANEAN SEA	30
6	31		42	23	46.5N	153.4E	33		4.5	4.81	4.53	KURILE IS	19
6	30	1	49	5	11.8N	142.5E	33		4.6	4.94	4.70	MARIANA IS	17
6	30	2	4	36	21.9S	170.8E	73		4.7	4.91	4.70	LOYALTY IS	14
6	30	3	59	15	36.5N	70.5E	200		4.4	3.75	4.26	HINDU KUSH	48
6	30	4	19	17	11.7N	142.6E	33		4.7	5.34	4.96	MARIANA IS	17
6	30	5	18	9	64.4N	146.9W	27		4.5	4.82	4.60	CENTRAL ALASKA	19
6	31	6	45	36	2.5S	102.4E	160		5.5	5.85	5.03	SUMATRA	24
6	31	7	38	58	47.1N	152.4E	79		4.1			KURILE IS	19
6	31	7	41	8	33.3N	49.1E	40		5.0	4.75	4.83	W IRAN	29
6	31	11	46	46	3.2S	75.2W	33		4.3	4.19	4.73	PERU	8
6	31	17	43	51	8.2S	77.5W	33		4.1	3.82	4.55	PERU	8
6	31	19	53	53	7.4N	72.9W	103		3.8	3.58	4.23	N COLOMBIA	7
6	31	20	11	15	46.7N	153.2E	33		4.2			KURILE IS	19
6	31	22	4	53	46.5N	153.3E	33	6.2	4.9	5.59	5.24	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
7	1	4	3	43	17.4S	167.6E	33		4.2	4.34	4.40	NEW HEBRIDES IS	14
7	1	6	31	27	25.7S	179.1E	583		4.1	5.01	4.75	FIJI IS	12
7	1	9	20	15	29.9N	141.3E	75		4.3			S HONSHU	18
7	1	17	53	12	20.8S	169.2E	33		4.7	4.47	4.35	LOYALTY IS	14
7	1	20	19	40	4.7S	103.7E	91			4.75	4.62	S SUMATRA COAST	24
7	1	21	10	28	37.0N	96.1E	33		5.3	5.31	5.05	CHINA	27
7	1	22	39	58	46.5N	153.6E	69		4.5	4.79	4.62	KURILE IS	19
7	2		15	22	43.9N	85.2E	39		4.4	3.85	4.06	CHINA	27
7	2	1	39	19	46.3N	153.4E	33		4.0	4.15	4.35	KURILE IS	19
7	2	2	52	53	2.4S	77.8W	33		4.6	5.12	4.80	ECUADOR	8
7	2	2	52	56	64.0N	148.4W	33		4.0	5.44	4.90	CENTRAL ALASKA	1
7	2	6	2	13	51.5N	159.1E	33		4.3	5.61	5.40	E KAMCHATKA COAST	19
7	2	6	30	14	30.7N	114.2W	33		4.2	2.11	3.65	N CALIF	4
7	2	8	2	54	39.8N	104.7W	15		4.6			COLORADO	34
7	2	9	46	36	7.8S	109.0E	117		5.1	4.83	4.71	JAVA	24
7	2	12	1	56			33			3.14	4.20	LOCAL IST 4.0	30
7	2	12	34	34	42.9N	126.2W	33		4.1	3.40		OREGON COAST	3
7	2	13	27	34	14.7S	70.5W	159		3.9			S PERU	19
7	2	15	3	10	45.7N	149.1E	33			5.08	4.80	KURILE IS	19
7	2	18	5	34	9.0N	83.0W	64		4.2	4.41	4.00	PANAMA-COSTA RICA	6
7	2	22		19	10.9N	87.5W	130		4.2	4.35	3.70	W NICARAGUA COAST	6
7	3	2	16	11	50.6N	177.9W	33		4.3	4.89	4.40	ANDREANOF IS	1
7	3	9	13	31	14.6N	97.8W	72		4.0	4.55	3.60	CHIAPAS MEXICO	5
7	3	11	58	48	16.3S	173.8W	24		4.1	4.05	4.20	TONGA IS	12
7	3	18	36	19	22.9S	175.6W	33		4.6	5.68	5.10	TONGA IS	12
7	3	22	6	34	12.4S	166.5E	35					SANTA CRUZ IS	14
7	4		55	30	45.7N	151.5E	50		3.9	4.76	4.50	KURILE IS	19
7	4	1	43	21	12.8N	88.7W	55					EL SALVADOR COAST	6
7	4	5	50	50	43.7N	126.4W	33		4.4	2.49	3.90	OREGON COAST	3
7	4	6	55	16	24.0N	122.4E	63		4.6	5.08	5.07	E FORMOSA COAST	21
7	4	8	3	48	7.5N	76.9W	41		4.1	4.01	4.13	NW COLOMBIA	7
7	4	10	58	13	26.3S	177.7W	158	6.8	6.5	7.02	5.86	TONGA IS	12
7	4	14	16	51	22.9S	175.6W	33		4.8	5.85	5.05	TONGA IS	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
7	4	17	49	43	15.8S	168.0E	150					NEW HEBRIDES	14
7	4	21	45	31	5.0N	120.6E	59					CELEBES SEA	23
7	4	22	56	16	18.5S	12.6W	33	5.4	5.6	5.12	4.90	ST HELENA IS	32
7	5	3	29	36	50.4N	90.6E	33		4.5	4.98	4.42	OUTER MONGOLIA	28
7	5	5	48	13	11.6S	77.5W	55		5.8	6.18	5.17	PERU	8
7	5	7	19	15	27.7N	92.1E	33		4.2	4.17	4.15	ASSAM INDIA	26
7	5	8	35	11	31.7N	142.4E	30		4.2			S HONGSHU	19
7	5	13	11	37	37.2N	73.0E	111		5.0	4.01	4.30	HINDU KUSH	48
7	5	14	21	28	39.1N	22.9E	33		4.2	3.37	4.17	GREECE	30
7	5	14	29	24	3.2S	77.8W	65		4.2	3.43	4.70	PERU-ECUADOR	3
7	5	14	40	54	12.8N	88.9W	85		4.1	4.97	3.70	EL SALVADOR COAST	6
7	5	16	27	28	36.7N	73.0E	193		4.3	2.91	3.55	HINDU KUSH	48
7	5	20	28	51	3.0S	141.9E	68		4.7	3.67	4.32	N NEW GUINEA COAST	16
7	6	1	1	28	30.3N	99.8E	33		4.9	4.97	5.00	SINKIANG CHINA	26
7	6	5	21	14	31.8S	179.0W	33		4.5	5.17	5.00	KERMADEC IS	12
7	6	13	34	4	28.0N	57.6E	80			3.90	4.90	SE IRAN	27
7	6	17	49	54	11.6N	142.7E	26		4.6	4.88	4.82	MARIANA IS	17
7	6	22	22	23	37.7N	141.7E	34		4.3	5.05	4.60	E HONGSHU COAST	19
7	6	22	32	31	16.3S	39.7E	33			4.65	4.64	MOZAMBIQUE COAST	37
7	7		1	13	42.2S	84.4E	33		5.0	5.41	5.12	INDIAN OCEAN	33
7	7	1	9	12	18.0S	168.0E	32			4.08	4.10	NEW HEBRIDES	14
7	7	9	30	56	51.7N	156.4E	33		3.8	5.03	4.85	KAMCHATKA	19
7	7	10	17	24	17.9N	145.6E	137		4.7	4.56	4.67	MARIANA IS	18
7	7	10	52	1	6.2N	124.5E	33		4.6	5.27	4.75	MINDANAO PI	22
7	7	19	20	42	39.6N	111.9W	32		4.9	4.17	4.32	UTAH	34
7	8		15	6	57.0N	134.5W	28		3.7	3.64	4.80	SE ALASKA	2
7	8	4	19	8	40.8N	125.8W	33		4.7	3.21	4.24	N CALIFORNIA COAST	3
7	8	8	58	4	26.7N	55.7E	33			4.82	4.95	S IRAN COAST	29
7	8	11	5	8	.3N	17.8W	33	5.3	4.9	5.37	5.01	MID-ATLANTIC OCEAN	32
7	8	11	40	17	19.9S	178.7W	582		4.3	4.05	4.10	FIJI IS	12
7	8	14	12	30	57.4N	154.0W	30		4.6	5.37	5.00	KODIAK IS	1
7	8	15	29	33	35.8N	69.7E	121			3.17	4.06	HINDU KUSH	48
7	8	16	2	26	36.6N	28.0E	30		4.7	4.83	4.38	S TURKEY COAST	30
7	8	17	49	30	65.8N	153.7W	33		4.8	5.12	4.70	ALASKA	42
7	8	21	2	56	6.8N	73.0W	166		4.0	4.00	3.95	COLOMBIA	7
7	8	22	1	21	17.0S	174.7W	95		4.0			TONGA IS	12
7	8	23	51	43	37.0N	90.5W	25		4.1			SE MISSOURI	34
7	9	3	4	37	46.3N	153.7E	33	6.0	4.8	5.25	5.02	KURILE IS	19
7	9	4	9	28	22.0N	145.7E	33		4.7	5.27	5.13	VOLCANO IS	18
7	9	4	20	50	15.2N	94.0W	33		4.5	4.80	4.62	MEXICO-GUATEMALA	5
7	9	6	16	53	.8N	121.5E	142		4.9	3.81	4.90	CELEBES	23
7	9	9	24	33	8.5N	83.0W	31	5.9	5.1	5.21	4.81	COSTA RICA-PANAMA	6
7	9	15	20	46	39.8N	111.8W	33		3.6			CENTRAL UTAH	34
7	9	17	22	54	60.0N	154.5W	60		4.4	4.40	4.70	S ALASKA	1
7	9	17	34	33	24.2N	122.4E	33		4.8	4.89	4.95	E FORMOSA COAST	21
7	9	18	37	22			33			4.33	4.60	LOCAL IST 4.6	30
7	9	18	56	12	29.1S	68.1W	33		4.8	5.64	5.15	ARGENTINA	8
7	9	20	25	29	40.1N	111.3W	33		4.1	2.42	2.90	UTAH	34
7	10	2	11	58	36.5N	71.8E	33		4.9	4.43	4.62	HINDU KUSH	48
7	10	3	14	41	46.3N	153.4E	33	5.7	4.8	5.57	5.50	KURILE IS	19
7	10	4	29	25	29.7S	177.2W	33		4.4	5.21	4.95	KERMADEC IS	12
7	10	5	6	51			22			3.26	3.90	LOCAL IST 1.7	30
7	10	5	22	57	46.3N	152.7E	33	6.3	5.6	6.34	5.14	KURILE IS	19
7	10	7	19	41	39.8N	23.9E	127		4.2	3.42	4.35	AEGEAN SEA	30
7	10	9	20	39	46.3N	154.0E	32		3.9			KURILE IS	19
7	10	9	49	29	13.4N	44.9W	37		4.9	5.02	4.62	N ATLANTIC OCEAN	32
7	10	11	47	35	16.3S	72.2W	90			4.93	4.90	S PERU	8
7	10	12	7	35	39.7N	112.0W	33		3.4		3.50	UTAH	34
7	10	13	54	22	46.1N	153.9E	32		4.8	4.69	4.80	KURILE IS	19
7	10	16	48	42	30.2S	177.8W	25		4.7	5.65	5.25	KERMADEC IS	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REF
7	10	18	22	47	8.8N	82.0W	51		4.3	3.48	4.50	PANAMA	6
7	10	18	32	51	39.9N	111.4W	33		4.2		3.20	UTAH	34
7	10	19	52	19	19.2N	145.2E	171	6.5	5.4	5.96	5.37	MARIANA IS	18
7	10	20	21	49	53.0N	171.4W	33		4.4			FOX IS	1
7	10	21	6	55	18.2S	167.7E	33			2.79	3.30	NEW HEBRIDES	14
7	10	22	25	4	18.3S	167.8E	33			2.90	3.40	NEW HEBRIDES	14
7	10	22	49	37	8.5N	83.0W	48		4.1	3.80	4.25	PANAMA COSTA RICA	6
7	10	22	31	45	18.3S	167.7E	33			2.83	3.30	NEW HEBRIDES	14
7	10	7	4	50	16.8N	91.3W	33		3.5			CHIAPAS MEXICO	5
7	11	13	20	13	16.6N	92.1W	33		4.5	4.25	3.80	UAXACA MEXICO	5
7	11	14	18	25	6.8N	72.9W	164		4.0	4.50	4.70	COLOMBIA	7
7	11	17	45	9	12.0S	166.5E	144		4.2	4.44	4.60	SANTA CRUZ IS	14
7	11	22	16	26	17.7S	179.1W	588		3.5			FIJI IS	12
7	12	5	38	11	6.1S	106.2E	133		5.4	5.00	4.77	JAVA	24
7	12	6	43	51	7.0N	73.2W	127		4.5	4.52	4.47	COLOMBIA	7
7	12	6	54	43	50.1N	129.8W	33		4.0	3.12	3.25	VANCOUVER IS	2
7	12	7	55	2	17.2S	178.5W	450		4.6	5.05	4.66	FIJI IS	13
7	12	12	23	27	50.2N	129.7W	33		4.5	4.05	3.63	VANCOUVER IS	2
7	12	12	52	41	50.4N	129.0W	33		4.0	3.91	3.72	VANCOUVER IS	2
7	12	14	3	38	50.3N	129.6W	33		4.8	4.21	4.62	VANCOUVER IS	2
7	12	15	28	8	46.8N	153.6E	33	5.1	4.8	5.58	4.79	KURILE IS	9
7	12	17	54	22	35.9S	71.9W	62			4.75	4.62	CHILE	8
7	12	23	42	3	33.9N	140.7E	73		4.4	4.43	4.52	CHONGSHU COAST	17
7	12	23	51	16	5.5S	153.3E	56		5.0	4.62	4.60	NEW BRITAIN	15
7	13	7	26	15	31.8S	71.0W	102		4.1	5.20	5.10	CHILE	5
7	13	8	24	24	29.6N	51.0E	44		5.0	4.67	4.63	W IRAN COAST	19
7	13	8	51	34	46.0N	154.1E	33		4.1			KURILE IS	17
7	13	13	58	25	44.3N	148.2E	33		4.6	5.11	4.83	KURILE IS	17
7	13	14	6	23	24.3N	122.3E	33	5.5	4.9	5.18	4.80	KYUKYO IS	21
7	13	19	8	39	24.9N	70.3E	33			4.47	3.80	E PAKISTAN	67
7	14	2	22	35	35.5S	177.2W	33	5.8	5.3	5.84	5.20	KERMADEC IS	12
7	14	1	31	10	46.3N	153.2E	33		4.2			KURILE IS	17
7	14	2	2	9	21.1N	121.4E	58			2.23	4.30	SATAN IS	21
7	14	2	21	8			33			3.12	3.40	LOCAL PMG 3.3	16
7	14	3	59	12	30.5S	177.3W	50		4.7	4.24	4.55	KERMADEC IS	12
7	14	4	59	21	14.7S	173.2W	33		4.2			SAMOA	12
7	14	5	38	48	46.1N	153.6E	33		4.4	4.62	4.80	KURILE IS	17
7	14	5	41	43	10.4N	62.6W	24	5.8	5.5	5.82	5.11	N VENEZUELA COAST	7
7	14	6	40	7	10.4N	62.5W	42		4.2	5.02	4.95	VENEZUELA COAST	7
7	14	7	46	21	29.5N	50.8E	33			3.20	4.12	PERCIAN GULF	20
7	14	9	8	32	31.7S	69.1W	110		4.6	4.18	4.50	ARGENTINA	5
7	14	10	51	42	36.1N	70.6E	120		5.1	4.62	4.66	HINDU KUSH	48
7	14	14	28	22	30.2S	177.4W	42		5.1	5.58	4.94	KERMADEC IS	12
7	14	14	48	28	30.3N	78.5E	33		4.8	3.68	4.80	N INDIA	20
7	14	17	6	35	39.4S	174.9E	189		6.0	5.25	5.62	NEW ZEALAND	21
7	14	19	18	25	8.9S	148.7E	26			5.27	6.10	NE NEW GUINEA COAST	16
7	14	19	18	43	15.8S	168.0E	186		4.8	5.51	5.08	NEW HEBRIDES IS	14
7	14	21	38	52	14.6S	175.2W	260		4.4			TONGA IS	12
7	15		31	50	4.4N	77.5W	47		4.4	3.24	4.50	COLOMBIA	6
7	15		41	8	20.2S	178.3W	510		3.9			FIJI IS	12
7	15	4	21	12	24.5S	178.8E	33		4.6	5.52	5.05	FIJI IS REGION	12
7	15	5	19	32	1.6N	127.1E	33			4.70	4.54	HALMAHERA	13
7	15	6	28	21	51.8N	176.8W	33		4.6	5.43	4.84	ANDREANOF IS	1
7	15	8	36	40	61.7N	134.9W	33		4.2	4.15	3.50	YUKON	2
7	15	8	41	7	55.6N	162.0E	60		5.2	5.52	5.02	KAMCHATKA	17
7	15	9	23	8	48.7N	152.9E	33		4.0			KURILE IS	17
7	15	16	32	19	14.4N	90.2W	33		2.8			GUATEMALA	5
7	15	16	42	35	62.0N	134.4W	33		3.8			YUKON	1
7	15	19	22	17	53.2N	162.9E	33		4.7	4.80	4.62	E KAMCHATKA COAST	17
7	15	20	30	15	20.6S	68.5W	263		4.2			CHILE-BOLIVIA	5

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
7	16	7	59	52	15.4S	173.3W	33		4.4	4.07	3.90	SAMOA IS	12
7	16	9	18	21	34.1N	116.1W	14					S CALIFORNIA	3
7	16	11	22	42	48.9N	130.7W	32		3.8	3.71	3.80	VANCOUVER IS	2
7	16	14	11	50	24.2N	108.7W	32		3.7			CALIFORNIA GULF	4
7	16	18	27	18	43.1N	41.5E	33	6.2	5.8	6.24	5.38	GEORGIA SSR	30
7	16	19	8	29	30.6S	177.2W	41		5.0	5.47	4.84	KERMADEC IS	12
7	16	22	11	23	43.3N	41.6E	17		4.9	4.40	4.45	GEORGIA SSR	30
7	17	3	24	37	46.9S	33.3E	33			4.98	4.50	PRINCE EDWARD IS	33
7	17	7	1	57	7.5S	107.2E	41		5.1	4.98	4.87	JAVA	24
7	17	10	34	36	25.4S	111.6W	32		4.7	5.02	4.45	EASTER IS	43
7	17	11	57	6	43.1N	41.5E	33	5.6	5.3	5.47	4.75	GEORGIA SSR	30
7	17	14	10	31	49.7N	150.8E	370		3.7	4.94	5.00	SEA OF OKHOTSK	46
7	17	15	7	22	49.5N	156.3E	78		4.7	5.41	4.90	KURILE IS	19
7	17	19	5	19	14.9S	167.3E	138		4.4	5.01	4.80	NEW HEBRIDES IS	14
7	17	20	44	32	34.0N	116.0W	14		4.3			S CALIF	3
7	17	23	5	42	34.1N	116.1W	14		4.2	2.04	3.10	S CALIF	3
7	17	23	11	7	34.1N	116.2W	14		3.9	2.20	3.30	S CALIF	3
7	18		4	5	49.1N	128.9W	33		4.8	4.78	4.66	VANCOUVER IS	2
7	18	4	1	16	37.2N	115.6W	25		3.9	2.46	4.00	S NEVADA	3
7	18	4	58	9	61.0S	22.3W	32		6.0	6.49	5.72	SANDWICH IS	10
7	18	5	25	4	18.5S	69.3W	72		4.9	4.92	4.30	N CHILE	8
7	18	6	33	24	37.1N	115.5W	25		3.9	2.42	4.00	S NEVADA	3
7	18	10	40	30	34.1N	116.1W	14		4.3	2.07	2.80	S CALIF	3
7	18	11	15	11	22.5S	67.0W	258		4.6	4.51	4.45	ARGENTINA	8
7	18	19	37	44	34.1N	116.1W	14	3.9	4.4			S CALIF	3
7	19	4	12	10	7.1N	33.6W	33		4.4	5.19	4.70	ATLANTIC OCEAN	32
7	19	5	45	28	43.4N	8.2E	33	5.2	5.5	5.50	5.07	LIGURIAN SEA	31
7	19	5	46	5	43.3N	8.1E	33	6.1	5.6	6.00	5.00	LIGURIAN SEA	31
7	19	5	59	48	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	6	2	18	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	6	31	2	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	9	44		36.3N	141.0E	70		4.6	5.21	4.66	E HONSHU COAST	19
7	19	7	1	46	44.7N	7.0E	33		4.4			FRANCE ITALY	31
7	19	7	4	30	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	8	2	29	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	11	46	37	52.0N	172.5W	50		4.4	5.15	4.40	ANDREANOF IS	1
7	19	9	40	12	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	11	43	13	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	11	49	8	43.3N	8.2E	32					LIGURIAN SEA	31
7	19	18	48	35	18.8N	145.7E	102		4.8	4.94	4.70	MARIANA IS	18
7	19	13	12	1	43.3N	8.2E	33					LIGURIAN SEA	31
7	19	15	54	55	34.1N	116.1W	14		4.4			S CALIFORNIA	3
7	19	19	12	56	42.4N	146.3E	43		4.4	4.87	4.50	KURILE IS	19
7	19	19	26	32	45.0N	110.4W	33					YELLOWSTONE PARK	34
7	19	20	56	43	45.1N	110.0W	33		3.4			S MONTANA	34
7	20		11	35	65.2N	133.7W	33		4.6	5.41	4.80	YUKON	42
7	20		51	56	43.4N	41.2E	33	5.3	4.8	5.27	5.20	GEORGIA SSR	29
7	20	1	45	6	31.1N	116.5W	14		4.3			BAJA CALIFORNIA	3
7	20	2	12	45	47.7N	152.2E	108		4.4			KURILE IS	19
7	20	3	54	34	43.3N	8.2E	32					LIGURIAN SEA	31
7	20	6	36	10	57.6S	148.5E	33	6.0	5.6	6.07	4.95	MACQUARIE IS	45
7	20	5	26	19	14.4N	142.9E	32		5.1			MARIANA IS	18
7	20	5	34	2	43.3N	8.2E	32					LIGURIAN SEA	31
7	20	5	35	34	51.3N	157.9E	65		4.2			KAMCHATKA	19
7	20	15	7	58	68.8N	4.6W	49		4.8	4.61	4.50	JAN MAYEN IS	40
7	20	7	34	30	10.5N	62.5W	56		4.0			VENEZUELA COAST	7
7	20	7	38	51	32.4N	140.5E	124		4.4			S HONSHU	19
7	20	10	41	3	45.1N	111.3W	33		3.4			SW MONTANA	34
7	20	19	13	6	37.1N	115.6W	25		4.1	2.45	4.00	S NEVADA	3
7	21	6	1	57	14.8N	56.1E	32			4.95	4.26	ARABIAN SEA	33

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MP	LOCATION	
7	21	6	47	32	17.8N	46.5W	39		4.8	4.23	4.40	N ATLANTIC OCEAN	32
7	21	11	5	23	56.1S	27.4W	80		5.5	5.89	5.50	SANDWICH IS	19
7	21	12	17	47	11.9S	166.7E	184		4.1			SANTA CRUZ IS	14
7	21	12	45	7	37.2N	141.7E	33		3.9			E HONSHU COAST	19
7	21	14	45	7	9.7N	122.3E	54			4.81	4.76	NEGRUS PI	22
7	21	18	48	30	26.5N	67.2E	112		4.0	3.40	4.00	HINDU KUSH	48
7	21	20	22	38	55.4N	155.7W	33		3.7			KODIAK IS	1
7	22		16	33	13.6N	89.9W	94		4.0			EL SALVADOR	1
7	22		29	14	6.1S	148.9E	59	5.0	5.1	5.42	4.70	NEW BRITAIN	1
7	22	11	8	52	50.4N	169.2E	33		4.2			BIAR IS	1
7	22	13	45	41	3.2S	76.0W	149		3.8	4.20	4.70	NW COLOMBIA	1
7	22	15	47	55	20.2S	174.1W	23		4.1	4.32	4.20	TONGA IS	12
7	22	16	33	22	12.5S	73.7W	79		4.5	2.69	4.20	N PERU	19
7	22	17	46	33	17.4N	94.8W	69		4.0	4.32	4.20	MEXICO	1
7	22	19	22	22	7.7N	126.8E	125			4.25	4.42	MINDANAO COAST	22
7	22	23	56	38	17.7S	167.9E	33					NEW HEBRIDES	14
7	23	3	22	24	50.2N	143.7E	33		4.2			LAHALLIN IS	14
7	23	6	17	51	41.5N	141.9E	91		4.4	5.25	4.58	ISJAGRO STRAIT	11
7	23	12	40	55	43.1N	147.5E	32		4.0			KORILI IS	11
7	23	17	13	43	12.4S	165.3E	23		5.6	3.88	4.00	SANTA CRUZ IS	14
7	23	19	2	52	17.5S	167.2E	33		4.4			NEW HEBRIDES	14
7	23	21	51	16	53.0N	176.3W	77					ANDREANOF IS	1
7	24	5	22	54	20.6S	178.7W	531		4.2	4.70	4.40	FUJI IS REGION	12
7	24	8	53	21	32.4N	138.4E	297		4.2			E HONSHU	19
7	24	9	26	46	27.2S	177.2W	33		4.4	4.94	4.60	BERMADO IS	12
7	24	9	49	13	57.6N	150.5W	33		4.0	5.21	5.00	KODIAK IS	1
7	24	10	57	47	44.9N	111.1W	33					WISCONSIN LAKE	24
7	24	11	1	32	16.7S	177.4W	32		4.4	4.63	4.40	FUJI IS	11
7	24	11	32	17	24.6N	122.0E	32	6.1	5.3	6.03	5.10	E FORMOSA COAST	1
7	24	11	50	31	36.1N	136.8E	32		4.1			HONSHU	19
7	24	12	28	20	14.5S	167.5E	133					NEW HEBRIDES	11
7	24	16	46	38	6.4S	147.8E	55		4.5	5.28	5.10	E NEW GUINEA COAST	10
7	24	14	5	4	12.3N	88.3W	47		3.8			EL SALVADOR COAST	1
7	24	19	4	32	9.0S	158.2E	33		5.8	5.02	5.08	SOLOMON IS	12
7	24	20	57		17.9S	167.2E	33		4.7	4.01	3.75	LOYALTY IS	14
7	24	21	47	54	9.7S	154.4E	16		5.2	5.52	5.48	SOLOMON SEA	19
7	25	7	4	22	6.8N	73.0W	152		5.2	5.47	5.18	N COLOMBIA	1
7	25	11	47	4	20.0S	179.4W	522		3.7			FUJI IS	11
7	25	12	57	49	14.2N	92.1W	32		4.2	4.74	4.20	MEXICO-GUATEMALA	1
7	25	15	17	18	8.1N	123.5E	657		4.4			MINDANAO PI	11
7	25	20	31	18	2.4S	77.8W	33		4.0	4.25	4.10	ECUADOR	19
7	26	4	17	16	42.1N	21.5E	33	5.6	5.4	5.99	5.25	S YUGOSLAVIA	1
7	26	4	53	14	42.1N	21.6E	33		4.2			S YUGOSLAVIA	11
7	26	5	26	45	15.0S	167.3E	124		4.6	5.32	5.00	NEW HEBRIDES	14
7	26	7	33	42	32.5N	117.8W	14		4.6			E CALIFORNIA	1
7	26	8	38	51	18.7N	107.1W	33		3.7			JALISCO MEXICO	1
7	26	9	26	46	39.6N	15.2E	337		4.2			MEDITERRANEAN SEA	11
7	26	19	46	33	36.9N	29.1E	32			4.31	4.40	RODECANESI IS	1
7	26	13	40	29	28.5N	112.0W	33		4.0	2.73	4.20	GULF OF CHILE	1
7	26	19	35	39	14.6S	173.0W	33		4.1			JAMCA IS	12
7	26	23	18	4	23.4S	72.3W	33			3.06	4.40	GULF N CHILE COAST	1
7	26	23	48	26	9.7S	78.5W	62		4.9	5.34	4.80	PERU COAST	1
7	27	5	58	23	43.5N	8.4E	33		5.1	5.27	5.05	LIGURIAN SEA	1
7	27	6	27	3	43.9N	128.3W	33		4.5	4.22	3.65	OREGON COAST	1
7	27	8		45	19.7S	178.5W	523		4.1	5.37	4.90	FUJI IS	11
7	27	9	21	57	18.4N	105.7W	33		3.8			JALISCO MEXICO	1
7	27	13	44	43	34.3N	23.1E	33		4.3			CHILE	1
7	27	16	47	4	35.9S	102.7W	32		4.6	4.80	4.55	EASTER IS	12
7	27	21	26	45	31.0N	140.3E	100		4.2	4.47	4.00	S OF HONSHU	19
7	27	22	19	52	13.2N	144.5E	87		4.3	5.03	4.40	MARIANA IS	17

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
7	27	22	21	16	23.7S	179.6W	33		4.5			FIJI IS	12
7	28	4	17	51	51.7N	174.5W	33		3.8	5.04	4.60	ANDREANOF IS	1
7	28	7	12	17	29.8S	177.6W	33			5.71	5.15	KERMADEC IS	12
7	28	7	55	21	11.3S	112.1E	21		5.1	5.60	5.26	JAVA COAST	24
7	28	9	37	18	19.2S	71.9W	110		4.3			N CHILE	8
7	28	10	5	28	1.5N	127.1E	33			4.56	4.40	MOLUCCA PASSAGE	23
7	28	11	43	16	6.7N	82.5W	47		4.1	4.71	4.53	S OF PANAMA	6
7	28	12	11	27	52.6N	158.9E	33		4.8	5.02	4.63	KAMCHATKA	19
7	28	13	25	18	72.0N		33		4.5	3.87	4.20	JAN MAYEN IS	40
7	28	14	42	43	51.9N	174.3W	33		4.0	4.74	4.60	ANDREANOF IS	1
7	28	14	48	7	51.9N	174.2W	33		4.0	5.15	4.70	ANDREANOF IS	1
7	28	15	16	29	14.2N	99.0W	33		3.7			MEXICO COAST	5
7	28	16	22	45	51.8N	174.4W	33		4.0			ANDREANOF IS	1
7	28	16	32	25	4.9S	152.7E	69		4.9	5.47	5.22	NEW IRELAND	15
7	28	18	51	36	46.6N	153.1E	33	6.0	5.0	5.77	5.27	KURILE IS	19
7	29	01	09	26	1.2N	126.0E	85		4.8			MOLUCCA SEA	23
7	29	4	48	50	30.4S	177.7W	33		4.5	5.17	4.80	KERMADEC IS	12
7	29	5	31	26	6.7S	107.1E	85		4.6	5.54	5.30	JAVA	24
7	29	6	10	22	27.8N	55.6E	37		5.2	5.44	4.90	S IRAN	29
7	29	10	36	26	34.1S	70.4W	33		4.8	5.53	4.75	CENTRAL CHILE	8
7	29	11	22	54	51.7N	173.5E	33		4.1	4.63	4.10	NEAR IS	1
7	29	12	43	13	79.3N	.6W	33		4.2			SVALBARD	40
7	29	16	48	42	5.7S	110.2E	530			5.21	4.90	JAVA SEA	24
7	29	20	14	7	30.2S	177.3W	39	6.6	5.7	6.44	5.36	KERMADEC IS	12
7	29	20	16	37	29.7S	177.0W	33		5.5	6.42	5.53	KERMADEC IS	12
7	29	22	55	14	10.3N	62.5W	39		4.4	4.63	4.86	VENEZUELA COAST	7
7	29	23	18	43	30.1S	177.1W	48		4.5	5.21	4.50	KERMADEC IS	12
7	29	23	40	3	5.4S	131.5E	33		4.8	4.78	4.80	GUANA SEA	24
7	30	2	18	42	30.0S	177.0W	41		4.1			KERMADEC IS	12
7	30	2	57	32	30.0S	177.2W	40		4.9	5.41	4.70	KERMADEC IS	12
7	30	3	27	44	19.5S	179.0W	575		4.1			FIJI IS	12
7	30	4	22	25	41.4N	30.0E	33					E TURKEY	30
7	30	4	27	25	30.2S	177.3W	17		4.6	5.11	4.55	KERMADEC IS	12
7	30	5	45	53	29.6S	177.3W	33	6.3	5.3	6.01	5.30	KERMADEC IS	12
7	30	6	34	55	34.0N	116.3W	14		4.7	5.10	5.70	CALIFORNIA	12
7	30	6	52	22	51.7N	158.1E	33		5.3	5.84	5.27	KAMCHATKA	41
7	30	7	55	42	29.8S	176.9W	33		4.3	5.17	4.50	KERMADEC IS	12
7	30	8	28	7	33.9N	135.1E	149		4.3	4.72	4.20	SW HONSHU COAST	18
7	30	12	25	39	11.4N	87.3W	33	4.2				NICARAGUA	6
7	30	12	57	25	29.2S	112.1W	33	4.8				EASTER IS	43
7	30	13	51	57	55.9S	27.5W	33	5.8	6.2	6.40	5.84	SANDWICH IS	10
7	30	14	23	13	29.5S	177.1W	33		5.2	5.91	5.50	KERMADEC IS	12
7	30	15	4	39	29.9S	177.4W	76	5.7	5.2	5.57	4.83	KERMADEC IS	12
7	30	17	24	35	15.7S	11.1W	219		3.7	3.37	4.70	S PERU	6
7	30	17	38	10	59.3N	151.7W	33		4.4	5.34	4.60	KENAI PENINSULA	1
7	30	22	45	52	33.7N	116.4W	33		4.3			S CALIFORNIA	1
7	30	23	30	59	7.3S	128.9E	143		5.0	4.92	4.80	GUANA SEA	24
7	31	1	44	19	29.8S	177.2W	65		4.8	5.42	4.60	KERMADEC IS	12
7	31	8	32	13	71.4N	5.5W	33		4.3			JAN MAYEN IS	40
7	31	8	51	43	29.6S	178.6W	600		3.8			FIJI IS	12
7	31	11	29	20	41.9N	142.4E	33		4.5	4.65	4.40	S HOKKAIDO COAST	19
7	31	13	24	52	51.3N	175.0W	33		4.0	4.73	4.43	ANDREANOF IS	1
7	31	14	43	40	8.2S	116.4E	33			5.12	4.62	SUMBAWA IS	24
7	31	15	9	38	42.2N	142.4E	33		4.3	5.19	4.83	S HOKKAIDO COAST	19
7	31	15	37	20	14.5N	92.2W	33		3.9	4.87	4.00	CHIAPAS MEXICO COAST	5
7	31	16	20	20	22.5S	176.9W	267		4.7	5.21	4.60	IONGA IS	12
7	31	18	32	29	9.2N	82.4W	33		4.1	3.84	4.20	S OF PANAMA	6
7	31	21	53	4	43.1N	88.3E	45		4.7			SINKIANG CHINA	28

MO	DA	HR	MN	SEC	LAT	LONG	DÉP	MAG	MCGS	MTOT	MB	LOCATION	REG
8	1	4	1	4	40.0N	115.6W	33		3.8	3.46	4.70	NEVADA	3
8	1	4	5	4	14.1N	92.3W	33		4.0			GUATEMALA	5
8	1	4	39	2	7.0S	146.1E	174		4.7	5.13	4.95	E NEW GUINEA	16
8	1	5		17	39.3N	109.1W	33		3.7			UTAH-COLORADO	34
8	1	5	22	15	21.8N	108.1W	33		3.7			W MEXICO COAST	5
8	1	10	45	2	55.3N	161.8E	50	5.8	5.0	5.47	5.12	E KAMCHATKA COAST	17
8	1	14	46	40	58.3N	151.9W	40		4.8	5.30	5.20	KODIAK IS	1
8	1	15	20	56	29.8S	177.2W	59		4.8	5.18	5.05	KERMADEC IS	12
8	1	18	22	53	42.3N	142.2E	26		4.3	6.06	5.70	HOKKAIDO JAPAN	19
8	1		30	26	15.0S	71.8W	100		4.1			S PERU	8
8	1	19	59	3	1.3N	85.8E	33		4.5	4.25	4.30	CHINA	27
8	1	20	53	58	17.6S	174. W	526		3.8			FIJI IS	14
8	1	21	43	9	52.1N	173.2E	90		4.4	5.26	5.20	NEAR IS	1
8	2	5	44	37	31.4N	131.6E	22		4.7			KYUSHU	20
8	2	8	3	1						3.05	4.47	LOCAL ANT 4.9	8
8	2	9	7	18	56.2N	34.1W	41		4.6	5.38	4.63	N ATLANTIC OCEAN	32
8	2	9	13	47	56.3N	34.5W	33	4.5	4.2	4.42	4.50	N ATLANTIC OCEAN	32
8	2	9	45	42	42.4N	114.5W	50					IDAHO	31
8	2	10	20	40	26.8N	141.2E	109		4.3	4.70	4.40	MARIANA IS REGION	18
8	2	10	49	16	34.7N	8.9W	33		4.1	4.36	4.60	MOROCCO COAST	31
8	2	12	49	35	57.5N	38.5W	33		4.2	4.19	3.40	N ATLANTIC OCEAN	32
8	2	14	28	36	11.8N	89.5W	33		3.9			EL SALVADOR COAST	6
8	2	19	26	26	6.0N	125.1E	118		5.0	5.11	4.86	MINDANAO IS	22
8	2	22	17	76	40.5N	125.1W	33		5.1			N CALIF COAST	3
8	2		37	50	37.0N	88.8W	18		3.6			ILLINOIS-KENTUCKY	34
8	3	1	9	56	8.8S	108.3W	33		4.4	5.04	4.95	SW OF GALAPAGOS IS	44
8	3	1	23	17	44.9N	115.4W	33		4.0			CENTRAL IDAHO	3
8	3	3	48	6	7.6S	156.8E	402		5.1	5.61	5.21	SOLOMON IS	15
8	3	6	28	2	6.7S	147.5E	83			5.37	4.95	E NEW GUINEA COAST	16
8	3	10	21	37	7.7N	35.8W	33	6.9	6.1	7.00	6.04	MID-ATLANTIC OCEAN	32
8	3	10	34	26	7.8N	35.9W	33		4.9	5.48	5.30	MID-ATLANTIC OCEAN	32
8	3	16	29	35	52.0N	174.3W	33	5.8	4.4	5.61	4.92	ANDREANOF IS	1
8	3	20	7	20	1.4N	28.2W	33		4.4	4.33	4.35	MID-ATLANTIC OCEAN	32
8	3	20	26	4	30.7S	178.3W	37		5.2	6.19	5.38	KERMADEC IS	12
8	4	2	13	51	42.6S	83.4W	33		4.7	4.85	4.80	OFF S CHILE COAST	6
8	4	5	40	8	46.4N	153.4E	33		3.9	4.64	4.40	KURILE IS	19
8	4	7	8	47	9.4S	114.2E	117		5.5	5.13	4.88	S JAVA COAST	24
8	4	9	13	18	22.6S	173.4E	72		4.9	5.07	4.92	LOYALTY IS	14
8	4	9	54	12	7.7S	129.5E	195		4.9	5.05	4.67	TANIMBAR IS	24
8	4	11	43	20	35.7N	140.1E	68		4.7	4.82	4.56	HONSHU JAPAN	19
8	4	12	7	24	4.1S	80.9W	34		4.7	5.67	5.14	N PERU COAST	2
8	4	13		44	12.6N	143.8E	61		4.6	5.17	4.86	MARIANA IS	17
8	4	13	25	52	22.8S	112.6W	33		4.3			EASTER IS	43
8	4	15	19	50	26.6S	176.8W	33		4.3	3.90	4.00	KERMADEC IS	12
8	4	21	40	52	5.2S	145.9E	59		4.9	4.64	4.85	NE NEW GUINEA COAST	16
8	4	23	54	14	17.5S	179.1W	515		5.2	5.96	5.30	FIJI IS	12
8	5	2	48	42	17.2N	99.8W	33		4.3	4.09	3.90	GUERRERO MEXICO COAST	1
8	5	5	03	51	44.1N	3.0E						FRANCE	31
8	5	7	41	38	27.2S	178.0W	33		4.2	4.91	4.50	KERMADEC IS	12
8	5	8	46	59	9.9S	79.0W	31		4.8	4.82	4.57	PERU COAST	8
8	5	15	39	7	60.7S	154.3E	33		5.2	5.69	5.16	MACQUARIE IS	45
8	5	20	5	6	37.0N	95.8E	33		4.6	4.01	3.70	TSINGHAI CHINA	27
8	6	1	34	22	11.3S	167.1E	33			4.05	4.10	SANTA CRUZ IS	14
8	6	5	20	32	45.1N	111.4W	33		3.7			SW MONTANA	34
8	6	7	28	30	38.1S	72.3W	96		4.8	5.26	4.82	CHILE	8
8	6	13	36	35	57.0N	33.6W	33	4.9	5.1	5.72	4.60	N ATLANTIC OCEAN	32
8	6	20	40	10	53.9N	160.7E	140		4.1			E KAMCHATKA	17
8	6	23	38	46	33.8N	116.7W	14		5.0			S CALIFORNIA	3
8	7	4	26	23	21.8S	173.5E	106		4.5	5.03	4.65	LOYALTY IS	14
8	7	4	33	43	54.0N	142.1E	33		5.1	5.44	4.83	SAKHALIN IS	41



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
8	7	7	17	25	7.5N	37.2W	33		4.6	4.52	4.20	ATLANTIC OCEAN	32
8	7	9	35	38	14.6N	91.3W	245		3.9	4.48	4.40	GUATEMALA	5
8	7	11	15	7	20.0S	178.3W	600		4.5	4.40	4.40	FIJI IS	12
8	7	11	16	48	20.1S	178.4W	600		4.3	5.85	5.10	FIJI IS	12
8	7	13	10	42	53.3N	164.1E	33		4.3			E KAMCHATKA	19
8	7	13	56	50	18.2S	177.9W	508		3.9	4.12	4.20	FIJI IS	12
8	7	15	38	58	21.2S	177.8W	352		4.4	4.34	4.23	FIJI IS	12
8	7	17	13	18	56.1S	27.0W	33		5.4			SANDWICH IS	10
8	7	18	36	46	13.6N	90.9W	67		4.7	4.82	4.56	NEAR S GUATEMALA COAST	5
8	8	2	14	54	54.2N	168.1E	33	5.7	5.5	6.10	5.40	KOMANDORSKI IS	1
8	8	3	9	52	29.8N	138.8E	458		3.8	5.05	4.90	S OF HONSHU JAPAN	18
8	8	9	54	43	45.2N	111.5W	33					SW MONTANA	34
8	8	10	58	23	35.9S	103.6W	33		4.7	4.94	4.60	EASTER IS	43
8	8	11	16	11	5.8S	151.0E	48	5.5	5.6	5.74	5.20	NEW BRITAIN	15
8	8	11	41	30	27.3N	129.2E	92		4.4	5.25	5.20	RYUKYU IS	20
8	8	13	53	42	18.3N	145.3E	423	5.8	4.9	5.22	4.82	MARIANA IS	18
8	8	19	11	11	32.2N	140.9E	77		4.0	4.56	4.40	S OF HONSHU	17
8	8	23	53	21	44.0N	110.9W	33		3.9			YELLOWSTONE PARK	34
8	9		48	40			33			3.32	4.60	LOCAL ANT 3.7	8
8	9	1	17	38	14.2N	92.3W	33		4.1	3.82	3.90	GUATEMALA	5
8	9	6	5	32	44.5N	11.9E	33	5.0	4.9	4.73	5.10	N ITALY	31
8	9	8	42	21	50.6N	157.2E	33		4.6	4.52	4.00	S KAMCHATKA	19
8	9	10	10	18	21.6S	171.1E	153		5.4	4.91	4.86	LOYALTY IS	14
8	9	12	20	2	51.6N	178.8W	33		4.5	5.09	4.36	ANDREANOF IS	1
8	9	14	13	59	1.2N	125.6E	33			6.62	5.40	MOLUCC PASSAGL	23
8	9	14	36	45	15.3S	175.7W	33	5.0	5.5	6.01	5.47	FIJI IS	12
8	9	15	12	57	3.0S	152.3E	143		4.9	5.02	5.00	NEW IRELAND	15
8	9	16	40	15	15.5S	167.7E	127		4.1	4.52	4.70	NEW HEBRIDES	14
8	9	19	14	07	51.2N	6.5E		3.5				GERMANY	30
8	9	20	29	58	36.9S	71.5W	186		4.3	4.12	4.30	CENTRAL CHILL	5
8	10	2	36	39	15.6S	175.0W	33		4.2	4.75	3.95	TONGA IS	12
8	10	3	34	44	27.3S	176.6W	140		4.3	4.92	4.50	KERMADEC IS	12
8	10	4	27	33	28.1N	53.3E	46		4.8	5.10	4.97	S IRAN	29
8	10	8	50	56			33			3.54	4.70	LOCAL ANT 3.3	8
8	10	13	17	47	24.7N	142.7E	33		5.0	5.93	5.35	VOLCANO IS	18
8	10	16	5	50	15.0S	179.0W	380		4.5	5.43	5.30	FIJI IS	13
8	10	17	51	39	3.2S	141.9E	06			4.66	4.95	N NEW GUINEA COAST	10
8	10	18	7	26	54.4S	132.8W	33		4.7	5.88	5.10	S PACIFIC OCEAN	43
8	10	18	37	45	8.8N	82.9W	33		4.3	3.82	4.35	PANAMA-COSTA RICA	6
8	10	21	2	39	49.6N	179.2E	33		4.3	4.60	4.10	RAT IS	1
8	11	1	34	22	60.5S	154.9E	33		5.4	4.89	4.90	BALLENY IS	45
8	11	5	24		17.4S	179.0W	500		4.1	4.65	4.50	FIJI IS	12
8	11	6	30	36	1.0S	78.9W	33		4.0	3.76	4.90	ECUADOR	8
8	11	7	37	20	38.8N	140.9E	45		5.0	5.38	4.91	NEAR E HONSHU COAST	19
8	11	8	43	47	37.1N	55.2E	33		4.4	3.81	4.60	N IRAN	29
8	11	10	3	5	38.1S	73.1W	60		5.0	5.72	4.95	S CHILL COAST	1
8	11	13	11	51	4.7S	145.4E	86		5.5	3.77	4.50	E NEW GUINEA COAST	10
8	11	14	34	58	53.0N	172.5E	33		4.1			NEAR IS	1
8	11	16	41	8			33			3.13	3.90	LOCAL PMG 3.8	16
8	11	17	40	52	36.2N	71.2E	148			2.80	4.30	HINDU KUSH	46
8	11	21	14	34	7.7S	108.8E	169					JAVA COAST	24
8	12	1	5	34	32.5S	71.1W	92		4.7	5.59	4.93	CHILL	8
8	12	3	1	37	38.1N	88.7E	33			5.23	5.20	SHANGHAI CHINA	27
8	12	7	19	54	27.7N	53.2E	33		5.0	4.75	5.03	SW IRAN COAST	29
8	12	8	58	3	11.6S	166.3E	53		4.2	4.15	4.53	SANTA CRUZ IS	14
8	12	10	10	8	5.7S	131.1E	92		5.7	5.17	4.96	BANDA SEA	23
8	12	13	6	46	2.1N	90.4W	33		4.6	4.44	4.26	GALAPAGOS IS	44
8	12	13	12	8	2.1N	90.5W	33		4.6			GALAPAGOS IS	44
8	12	17	19	5	9.8N	84.2W	114		4.2			COSTA RICA	6
8	12	17	42	46	5.9S	146.5E	100		4.4	4.99	4.60	E NEW GUINEA COAST	16

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REC
8	12	18	7		25.3N	62.7E	33		5.2	5.43	5.20	W PAKISTAN COAST	26
8	12	20	59	8	21.7N	155.7W	33		4.6	5.02	4.70	TONGA IS	12
8	12	21	14	00	56.0S	27.7W						SANDWICH IS	10
8	13	3	26	45	55.0N	156.4W	33			5.76	5.24	KODIAK IS	1
8	13	4	53	58	7.2S	124.5E	542		5.3	4.48	4.10	WANDA SEA	24
8	13	6	4	44	15.9N	95.3W	33		3.8			GAAZ A MEXICO	5
8	13	6	27	17	20.6S	178.5W	562		4.6	5.39	4.98	FIJI IS	12
8	13	6	52	6	18.1N	173.9W	28		4.7	5.07	4.78	TONGA IS	
8	13	7	3	50	36.6N	70.9E	444	5.4	4.7			HINDU KUSH	46
8	13	12	39	55	3.1S	80.4W	66		4.3	4.30	4.10	ECUADOR COAST	8
8	13	13	28	2	76.2N	6.4E	33		4.7	5.00	4.65	SVALBARD	40
8	13	21	52	37	19.3S	173.7W	33		5.1	5.47	4.95	TONGA IS	12
8	13	23		24	27.2N	140.1E	448	5.0	4.8	5.48	5.13	SONIN IS	18
8	14		15	7	16.7S	28.7E	33			5.06	4.70	N RHODESIA	
8	14	2	46	44	21.4S	175.2W	33		4.7	5.26	4.75	FIJI IS	12
8	14	3	32	33	4.9S	152.3E	62		5.8	5.75	5.17	NEW BRITAIN	12
8	14	5	57	42			33			3.12	4.50	LOCAL ANT 2.9	0
8	14	8	27	14	9.3S	158.3E	33		4.7	3.92	4.57	SOLOMON IS	12
8	14	9	3	46	18.4N	104.6W	33		4.2	3.41	3.60	JALISCO MEXICO COAST	5
8	14	12	30	6	41.5N	112.2W	33		3.7		3.40	N UTAH	34
8	14	13	46	2	83.6N	4.6W	33		4.6	2.77	3.80	SVALBARD	40
8	14	14	32	37	22.3S	68.7W	120		5.1	5.70	5.03	N CHILE	8
8	14	16	18	18	24.1N	122.4E	28		5.3	4.73	4.75	FORMOSA COAST	21
8	14	18	43	55	3.4S	135.4E	33	5.8	6.4	6.15	5.75	N IRIAN	16
8	14	20	43	11	22.5S	175.5W	33		4.4	5.49	4.70	TONGA IS	12
8	14	21	20	42	40.6N	143.6E	33		4.1			NE HONSHU	12
8	14	21	48	28	17.5S	178.3W	487		3.6	3.23	3.60	FIJI IS	13
8	15		47	5	2.8N	76.1W	33		4.3			S COLOMBIA	8
8	15	1	33	2	18.1S	172.6W	33		4.2			TONGA IS	12
8	15	2	17	16	27.9N	139.6E	476	6.0	4.7	5.41	5.20	SONIN IS	18
8	15	6	11	34	37.9N	141.6E	59		5.7	6.24	5.52	NEAR E HONSHU COAST	19
8	15	8	42	17	51.5N	177.8W	33		4.2			ANDRLANOF IS	1
8	15	9	59	25	21.6S	174.7W	33		4.2			TONGA IS	12
8	15	10	18	30	15.8S	175.3W	287		4.2			TONGA IS	12
8	15	17	25	5	13.8S	69.3W	543	7.5	6.0	6.83	5.72	PERU-BOLIVIA	8
8	15	14	36	1	10.0S	78.6W	80		4.4	2.65	3.80	PERU COAST	8
8	15	14	57	51	20.0S	178.9W	298		4.2			FIJI IS	12
8	15	19	14	27	40.2S	71.8W	58		4.1			S CHILE	4
8	15	21	2	34	36.1N	121.1W	33					CALIFORNIA	3
8	15	21	21	33	35.9N	121.1W	33		4.0			CALIFORNIA	3
8	15	22	29	47	21.0S	179.2W	597		4.9	5.57	5.16	FIJI IS	12
8	15	23	57	2	69.8N	8.9E	33		4.9	5.48	5.60	ATLANTIC OCEAN	40
8	16	2	38	10	3.1S	129.3E	74		4.6	4.26	4.25	CERAM SEA	23
8	16	3		24	6.3S	129.0E	263		4.5	4.06	4.20	WANDA SEA	23
8	16	3	21	9	39.7N	112.1W	33		3.4			CENTRAL UTAH	34
8	16	7	1	4	41.5N	112.2W	33		3.6			N UTAH	34
8	16	7	5	26	48.8N	155.0E	33		4.5			KURILE IS	19
8	16	20	49	52	2.1N	126.1E	36		4.5	4.79	4.36	MOLUCCA PASSAGE	23
8	16	17	27	36	15.1S	172.8W	33		4.5			TONGA IS	12
8	16	21	45	1			33			3.57	4.70	LOCAL PMG 4.0	16
8	16	22	28	45	43.9N	142.1E	81		4.5	4.39	4.60	HOKKAIDO JAPAN	19
8	16	23	6	24	12.8S	14.5W	33		5.1	5.12	5.15	S ATLANTIC OCEAN	32
8	16	23	19	31	48.7S	122.8E	33			5.02	4.60	S OF AUSTRALIA	33
8	17	5	9	11	41.4N	112.2W	33		3.5		3.00	N UTAH	34
8	17	5	33	40	20.0S	174.0W	33		4.6	5.20	4.90	TONGA IS	12
8	17	6	17	36	52.4N	168.7W	33		4.3	5.21	4.85	FOX IS	1
8	17	9	35	25	34.2S	179.9W	368		4.3	4.29	4.03	HERMADE IS	12
8	17	10	23	16	40.4N	110.7W	33		3.5		2.95	UTAH	34
8	17	11	12	41	30.6N	130.7E	33	5.4	5.6	6.08	5.39	KYUKYU IS	20
8	17	11	33	28	63.4S	169.5E	33			5.77	5.20	GALLNEY IS	43

MU	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
8	17	11	34	23	17.7N	94.3W	163		4.9	5.36	4.84	VERACRUZ MEXICO	5
8	17	20	56	42	20.3S	67.4W	33		4.6	4.98	4.60	S BOLIVIA	8
8	17	21	58	54	36.7N	59.7E	33		4.8	4.82	4.85	N IRAN	29
8	17	22	15	22	32.1N	40.9W	33		4.8	4.57	4.50	N ATLANTIC OCEAN	32
8	18	7	9	51	35.9N	139.2E	153		4.8	5.00	4.74	HONSHU	19
8	18	10	18	10	7.5N	74.1W	33		3.8	3.47	4.15	COLOMBIA	7
8	18	15	58	14	19.5N	45.4W	33		4.2			N ATLANTIC	32
8	18	18	43	16	50.3N	176.9W	33	5.7	5.5	6.14	5.45	FOX IS	1
8	18	19	52	40	18.0S	178.3W	544		4.3	3.54	3.75	FIJI IS	13
8	18	20	18	29	22.5S	175.2W	33		4.7	5.32	5.00	TONGA IS	12
8	18	20	27	41	32.1S	178.1W	33		5.0	5.66	5.15	KERMADEC IS	12
8	18	23	7	54	14.2S	71.9W	31		4.6	5.30	4.80	S PERU	8
8	19	1	34	38	9.0S	111.0W	33		4.1			SW GALAPAGOS	44
8	19	4	24		32.0S	177.9W	33		4.8	5.82	5.17	KERMADEC IS	12
8	19	5	53	45	17.6S	168.0E	33			3.93	4.00	NEW HEBRIDES	14
8	19	6	24	24	41.0N	143.5E	25		4.3			NE HONSHU	19
8	19	7	29	40	45.6S	95.7E	33			5.13	4.70	INDIAN OCEAN	33
8	19	9	39		40.9N	126.0W	33		4.1			N CALIF COAST	3
8	19	9	51	25	59.8S	25.9W	33			5.59	5.30	SANDWICH IS	10
8	19	11	49	26	45.7S	95.9E	33			5.11	4.70	INDIAN OCEAN	33
8	19	14	59		41.5N	141.8E	117		4.0			E HONSHU COAST	19
8	19	16	54	1	17.0S	168.8E	231		3.8	4.93	4.86	NEW HEBRIDES	14
8	19	19	9	48	6.1S	130.7E	33		4.3	4.73	4.50	BANDA SEA	23
8	19		27	40	21.9S	175.8W	33		4.2			TONGA IS	12
8	20	4	57	16	18.8S	174.2W	25		3.9	4.37	3.90	TONGA IS	12
8	20	6	39	56	5.5S	145.8E	90			4.52	5.00	NE NLW GUINEA	16
8	20	6	53	28	6.9S	103.0E	61			4.80	4.55	OFF SUMATRA COAST	24
8	20	9	20	26	27.8S	176.5W	37			4.55	4.00	KERMADEC IS	12
8	20	9	25	38	16.0N	92.4W	193		4.2	4.70	4.40	CHIAPAS MEXICO	5
8	20	12	59	29	37.1N	139.3E	53		4.1			HONSHU	19
8	20	13	19	50	4.1N	76.5W	59		4.5	4.87	5.05	COLOMBIA	8
8	20	15	48	12	41.2N	142.7E	50		4.5	5.46	4.96	E HONSHU COAST	19
8	20	19	43	56	30.2S	177.9W	43		4.2	5.75	4.95	KERMADEC IS	12
8	20	20	14	31	.0	80.9W	64		4.2			ECUADOR COAST	8
8	21	2	41	33	5.5S	147.7E	164		4.4			NEW BRITAIN	16
8	21	3	39	22	14.3N	72.5W	33		5.4	6.48	5.88	CARIBBEAN SEA	7
8	21	5	6	44	6.7N	72.8W	182		3.8	4.02	5.00	COLOMBIA	7
8	21	10	17		8.3S	108.8E	225			3.24	3.60	S JAVA COAST	24
8	21	17	33	45	20.2S	108.6W	33		4.3	5.24	4.40	REVILLA GIGEDO IS	4
8	21	18	7	44	49.0N	158.2E	33		4.9	5.18	4.85	KURILE IS	19
8	21	18	20	52	51.8N	176.5W	17		4.2	5.73	5.20	ANDREANOF IS	1
8	21	22	59	24	21.3S	176.0W	140		4.0	4.82	4.70	TONGA IS	12
8	22	3	58	43	63.2N	148.5W	101		4.6	5.08	4.73	ALASKA	1
8	22	4	33	54	34.1N	116.2W	14		4.4	3.80	4.80	CALIFORNIA	3
8	22	5	1	38	1.2S	128.5E	33		3.7	5.16	4.86	HALMAHERA	23
8	22	5	51	46			33			3.30	4.60	LOCAL ANT 4.6	8
8	22	9	27	9	42.0N	126.2W	33		5.6	3.82	4.46	UREGUN COAST	3
8	22	12	13	11	33.7N	118.0W	14		4.3			S CALIFORNIA	3
8	22	14	39	27	1.9S	133.9E	33		4.3	5.31	4.95	IRIAN	16
8	22	15	53	56	14.5S	71.8W	284		3.5			S PERU	8
8	22	17	5	27	7.2S	120.4E	398			4.58	4.40	FLORES SEA	24
8	22	18	18	49	3.8S	104.2W	33		4.3	4.64	4.10	GALAPAGOS IS	44
8	22	19	52	25	9.4S	158.0E	33	6.5	6.1	6.66	5.73	SOLOMON IS	16
8	22	21	24	48	45.0S	75.1W	33		4.5			S CHILE COAST	9
8	22	23	20	21	4.3N	76.4W	100		4.9	5.47	5.00	COLOMBIA	8
8	23	3	45	18	44.7N	146.1E	135		4.5			KURILE IS	19
8	23	13	9	25	52.4N	159.6E	33	5.8	4.5	5.27	4.83	E KAMCHATKA COAST	19
8	23	13	35	57	17.3S	67.8W	33		4.5	4.53	5.30	PERU-BOLIVIA	8
8	23	15	24	6	4.9N	128.1E	268			4.30	4.20	TALAUD IS	23

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
8	23	16	42	34	52.5N	159.5E	67		4.1	5.63	5.40	E KAMCHATKA COAST	19
8	23	21	28	12	4.4S	134.9E	95		5.2	4.20	4.70	IRIAN	16
8	23	23	22	10	28.6N	142.5E	45		4.6	4.14	4.20	BONIN IS	18
8	24	1	41	40	22.4S	68.5W	66		4.7	4.82	4.20	N CHILE	8
8	24	2	11	58	54.3S	5.2E	28			5.08	4.90	BOUVET IS	32
8	24	3	1	30	55.9N	162.1E	110		4.0			E KAMCHATKA	19
8	24	3	15	50	40.8N	112.0W	33		3.5			N UTAH	34
8	24	3	18	10	30.7S	178.2W	42		4.6	5.26	4.95	KLRMADEC IS	12
8	24	10	10	15	19.3N	108.8W	33		4.0	2.64	3.55	JALISCO MEXICO	5
8	24	10	49	8	36.0N	117.6W	25		3.7	2.83	4.30	CALIFORNIA	3
8	24	12	50	13	37.3S	178.2W	36			5.16	4.85	E NEW ZEALAND	43
8	24	10	58	28	51.0N	179.4E	33		4.0			RAT IS	1
8	24	13	28	20	34.2N	116.4W	14				3.00	S CALIFORNIA	3
8	24	20	47	37	31.4N	116.4W	14		4.5	2.27	3.70	BAJA CALIFORNIA	4
8	24	21	41	57	45.0N	151.7E	33		4.1	5.07	4.80	KURILE IS	19
8	25	2	20	12	48.7N	148.8E	134		4.7	4.73	4.58	SEA OF OKHOTSK	46
8	25	5	21	19	45.2N	151.3E	33		4.6	5.58	5.10	KURILE IS	19
8	25	6	11	43	38.9N	38.4E	33	5.1	4.8	5.10	4.66	CENTRAL TURKEY	30
8	25	12	18	13	17.5S	178.8W	565	6.3	6.1	5.70	5.56	FIJI IS REGION	12
8	25	13	26	1	17.9S	178.8W	610		3.6	5.47	5.00	FIJI IS	12
8	25	13	34	46	17.4S	178.7W	540		3.6			FIJI IS	12
8	25	17	53	4	15.6S	173.1W	33		4.2	4.59	4.60	TONGA IS	12
8	25	18	44	15	52.5N	172.5W	80		4.5	4.77	4.33	ANDRIANOF IS	1
8	26	1	30	9	14.4N	91.3W	33		3.8			GUATEMALA	5
8	26	2	28	12	26.3S	178.8E	546		4.4	5.69	5.25	FIJI IS	12
8	26	2	59	46	19.3S	175.4W	83		4.5	5.70	5.10	TONGA IS	12
8	26	4	49	43	17.7S	178.8W	575		4.6	4.72	4.61	FIJI IS	13
8	26	5	42	40	6.8S	105.6E	33		5.1	4.88	4.75	JAVA	24
8	26	8	45	32	51.6N	157.0E	105		4.7	5.00	4.60	E KAMCHATKA COAST	19
8	26	12	19	28	22.7S	171.7E	43		4.5	4.38	4.30	LOYALTY IS	14
8	26	12	45	30	32.7N	137.7E	347		4.2	3.92	4.05	S OF HONSHU	10
8	26	18	49	19	19.8N	155.6W	5		4.4	4.22	3.70	HAWAII	37
8	26	23	32	38	7.7S	127.3E	151		4.4	5.05	4.62	BANDA SEA	24
8	27	1	20	55	31.6N	116.2W	14		4.4	2.68	4.20	BAJA CALIFORNIA	3
8	27	2	29	51	17.5N	72.6W	180		3.6			CHIAPAC MEXICO	5
8	27	3	15	36	72.9N	6.4E	33		4.7	3.16	4.50	ARCTIC OCEAN	40
8	27	3	23	32	45.9S	75.3W	33		5.3	5.41	4.50	S CHILE COAST	9
8	27	3	32	57	11.2S	165.7E	33		4.2	7.30	5.10	SANTA CRUZ IS	14
8	27	5	51	37	44.1N	129.5W	33		4.2	3.27	3.83	OFF GREENLAND COAST	3
8	27	7	6	57	5.5S	149.3E	162		4.2	2.71	4.30	NEW BRITAIN	16
8	27	12	56	55	17.7S	70.1W	188		4.2			S PERU	8
8	27	18	8	17	10.0S	161.3E	92		4.5	3.21	4.05	SOLOMON IS	15
8	27	20	40	37	18.3N	146.4E	78		4.1	4.31	4.63	MARIANA IS	18
8	27	22	2	55	40.2N	145.2E	55		4.8	4.95	4.62	E OF HONSHU	19
8	27	23	40	42	16.1N	76.9W	38		4.3	3.91	3.30	OAXACA MEXICO	5
8	28		13	13	40.9N	111.9W	33		3.4			N UTAH	34
8	28	2	40	21	16.3N	96.9W	33		3.9	4.57	4.10	OAXACA MEXICO	5
8	28	5	55	51	12.6N	87.2W	115		4.2			NICARAGUA	6
8	28	7	32	12			33			3.93	5.00	LOCAL ANT 2.8	8
8	28	12	48	22	61.9S	164.5E	33			5.16	4.20	BALLENY IS	45
8	28	15	51	6	28.3N	141.0E	76		5.1	4.91	4.60	BONIN IS	18
8	28	16	57	46	39.1S	91.8W	33		4.7	4.56	4.16	W OF CHILE	43
8	29	1	22	6	2.0N	123.4E	43			5.46	5.07	N CELEBLIS	23
8	29	4		18	6.7N	72.9W	170		3.9	3.84	4.70	COLOMBIA	7
8	29	6	8	48	21.9N	145.5E	130		4.6	4.95	4.45	MARIANA IS	18
8	29	8	53	48	39.6N	74.2E	31	6.3	5.5	6.31	5.56	SINKIANG CHINA	48
8	29	15	30	31	7.1S	81.6W	23	6.8	6.1			OFF PERU COAST	8
8	29	20	57	31	15.5S	172.9W	33		4.9	4.88	4.70	TONGA IS	12
8	30		16	36	8.7S	108.6E	33		5.1	5.50	5.14	S JAVA COAST	24
8	30		43	19	23.3S	66.3W	239		4.6	4.65	4.75	ARGENTINA	8

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
8	30	4	46	25	44.8N	80.1E	33		4.9	5.11	4.78	CHINA-KAZAKH USSR	27
8	30	7	16	4	71.6N	4.7W	33		4.2	4.01	4.40	JAN MAYEN IS	4
8	30	13	51	52	23.4S	175.4W	33		4.9	5.29	4.98	TONGA IS	12
8	31	8	17	53			33			4.13	5.10	LOCAL ANT 3.3	8
8	31	10	30	30	15.9S	74.4W	53		4.1	2.76	4.20	S PERU	8
8	31	12	47	11	28.2N	129.3E	33		4.6	5.07	4.70	RYUKYU IS	20
8	31	13	8	46	11.9N	87.0W	48		4.9	5.05	4.96	W NICARAGUA COAST	6
8	31	16	29	52	47.5N	143.6E	70		4.7			SAKHALIN IS	41
8	31	16	31	12	36.6N	121.8W	15			2.59	4.15	CALIFORNIA	3
8	31	16	53	45	2.0N	127.5E	70			5.73	5.10	HALMAHERA	23
8	31	21	26	9	21.5S	179.2W	543		4.8	5.04	4.65	FIJI IS	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	1	1	34	34	33.9N	74.5E	33			4.43	3.90	N INDIA	47
9	1	6	47	24	31.7N	141.0E	33		4.1			S HONSHU	19
9	1	11	11	14	5.4N	82.4W	61		4.6			S PANAMA	6
9	1	11	30	31	40.6S	83.8W	33		4.2			OFF S CHILE	9
9	1	15	23	57	50.2N	129.4E	33		4.1	4.67	3.80	VANCOUVER IS REGION	2
9	1	18	59	41			33			3.73	4.60	LOCAL CHG 9.6	25
9	1	22	57	34	11.3N	85.5W	120		4.4	4.41	4.22	NICARAGUA	6
9	1	23	28	8	1.0N	28.4W	33		4.5			N ATLANTIC	32
9	1	23	43	3			33			3.39	4.60	LOCAL ANT 3.3	8
9	2	1	34	32	33.9N	74.7E	33		5.1	5.19	4.87	N INDIA	47
9	2	2	27	14	24.3N	108.6W	33		4.1	3.54	4.75	GULF OF CALIFORNIA	4
9	2	3	46	15	49.5N	128.3W	33		3.7			VANCOUVER IS	2
9	2	4	10	18	14.1S	76.4W	41		4.5	5.03	4.65	S PERU	8
9	2	6	52	11	40.3N	145.3E	33		4.4			E HONSHU COAST	19
9	2	8	3	21	52.5N	169.2W	33		4.4	4.57	4.20	FOX IS	1
9	2	11	44		45.4N	150.9E	33		4.5	5.23	4.96	KURILE IS	19
9	2	13	2	7	18.2S	62.6W	33		4.5	5.32	5.20	BOLIVIA	8
9	2	13	10	43	26.2N	109.5W	33		4.0			MEXICO COAST	4
9	2	13	20		29.1N	109.3W	33					SONORA MEXICO	34
9	2	13	27	38	50.5N	129.4W	33		4.6	4.71	4.62	VANCOUVER IS	2
9	2	13	30	4	50.4N	129.1W	33		4.4	5.01	5.50	VANCOUVER IS	2
9	2	13	40	58	25.7N	109.7W	33		4.1	3.98	5.00	GULF OF CALIFORNIA	4
9	2	14	10	44	25.7N	109.5W	33		4.8	4.65	4.70	GULF OF CALIFORNIA	4
9	2	16	42	53	6.0S	154.8E	321		4.2	5.52	4.50	SOLOMON IS	15
9	2	17	40	15	39.6N	110.2W	33		4.1			E UTAH	34
9	2	19	3	23	20.7S	175.1W	33		4.5			TONGA IS	12
9	2	19	34	40	41.0N	141.9E	33		4.4			HONSHU	19
9	2	22	11	57			33			3.41	4.50	LOCAL CHG 8.6	25
9	2	22	25	52	26.2N	90.0E	220			4.00	4.00	ASSAM INDIA	26
9	2	22	37	22	37.9S	179.5W	33			5.33	4.90	NORTH IS COAST	11
9	2	23	45		45.4N	150.8E	33		4.9	5.30	4.91	KURILE IS	19
9	2	1	53	21	44.8N	150.9E	59		4.1			KURILE IS	19
9	2	3	49	42	60.3S	152.0E	33					BALLENY IS	45
9	3	4	57	57	45.0N	151.0E	33		4.3	4.90	4.60	KURILE IS	19
9	3	5	3	18	36.0N	140.7E	33					E HONSHU	19
9	3	5	29	40	45.4N	150.9E	33		4.5	5.31	5.06	KURILE IS	19
9	3	6	12	9	51.9N	173.5W	50		4.7	5.00	4.65	ANDREANOF IS	1
9	3	9	13	33	62.8N	25.2W	33		4.9	4.86	4.70	ICELAND REGION	32
9	3	12	59	52	61.9N	150.4W	116		4.0			KENAI PENINSULA	1
9	3	18	37	43	6.9N	73.1W	143		4.4	4.92	4.71	COLOMBIA	7
9	3	19	31	17	50.8N	133.5W	33		3.9			QUEEN CHARLOTTE IS	2
9	3	23	28	25	16.8S	177.2W	33		4.6	5.14	4.75	FIJI IS	13
9	4	3		51	29.3N	127.5E	253		4.4	4.67	4.50	E CHINA SEA	20

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REQ
9	4	3	29	55	52.1N	175.2W	33		4.1			ANDREANOF IS	1
9	4	5	6	47	36.1N	5.3E	38	5.4	5.2	5.52	4.87	ALGERIA COAST	31
9	4	8	37	40	36.3N	5.1E	33		4.4			ALGERIA COAST	31
9	4	10	35	35	7.9N	82.7W	33		4.1	3.36	4.60	S PANAMA COAST	6
9	4	12	41	17	43.9N	128.6W	33		4.0			OFF OREGON COAST	3
9	4	13	32	12	71.4N	73.3W	33	6.3	5.9	6.62	5.29	E BAFFIN IS COAST	42
9	4	15	42	14	.9S	145.7E	33		5.5	4.01	5.00	ADMIRALTY IS REGION	16
9	4	18	36	28	24.1N	96.0E	148	5.8	5.0	4.99	4.55	N BURMA	25
9	4	21	20	19	71.5N	72.8W	33		4.1	4.27	4.10	BAFFIN IS	42
9	4	21	41	1	71.6N	73.5W	33		4.4	4.50	4.35	E BAFFIN IS	42
9	5		1	40			33			3.81	4.90	LOCAL ANT 4.1	6
9	5		55	59	17.8S	178.5W	558		4.6	5.84	5.20	FIJI IS	13
9	5	10	42	42	18.0S	168.1E	33		4.4	4.42	4.33	NEW HEBRIDES IS	14
9	5	11	36	32	50.7N	129.1W	33		4.2	4.14	3.96	VANCOUVER IS	2
9	5	11	44	36	43.3N	8.0E						MEDITERRANEAN	31
9	5	17	11	8	36.0N	5.7E	33		4.0	3.53	3.70	ALGERIA COAST	31
9	5	23	43	5	18.6N	106.8W	33		4.3	3.99	3.56	OFF JALISCO MEXICO	5
9	5		1	40	19.3S	176.9W	66		4.2	4.78	4.48	TONGA IS	12
9	6	1	46	13	71.5N	73.0W	33		4.4	5.15	4.66	E OF BAFFIN IS	42
9	6	5	29	54	10.9S	164.8E	33		4.2	4.17	4.53	SOLOMON IS	15
9	6	6	3	52	36.4N	130.6E	33		5.4	5.95	5.17	SEA OF JAPAN	41
9	6	8	10	26	6.1N	126.2E	47		4.6	5.47	5.05	SE MINDANAO COAST	22
9	6	10	16	39	24.0S	179.9E	500		5.2	6.03	5.43	KERMADEC IS	12
9	6	11	58	39	55.4S	128.4W	33		4.4	5.12	4.95	S PACIFIC OCEAN	43
9	6	13	57	42	2.2N	83.2W	33		4.8	4.92	4.68	S OF PANAMA	8
9	6	14	40	43						3.01	4.20	LOCAL ARE 3.5	6
9	6	17	44	56	15.2S	167.9E	231					NEW HEBRIDES	14
9	6	20	2	23	11.8N	138.5E	33		4.8	4.98	4.82	MARIANA IS	17
9	6	20	21	46	50.1N	129.5W	31		4.4	4.62	4.30	VANCOUVER IS	2
9	6	20	57		53.9N	165.6W	33		5.0	5.53	4.87	FOX IS	1
9	6	22	12	35	44.3N	114.7W	33		4.1			CENTRAL IDAHO	34
9	7	1	16	55	36.4N	130.6E	33	6.0	5.3	5.98	5.10	OFF E S KURIL COAST	41
9	7	2	29	38	21.5S	174.6W	33		5.1	5.68	5.25	TONGA IS	12
9	7	4	9	20	5.9S	129.8E	169		5.2	5.16	4.87	BANDA SEA	23
9	7	7	13	40	45.4N	150.8E	33	5.8	5.2	5.86	5.25	KURILE IS	19
9	7	8	26	36	18.9S	174.9W	131		4.4	4.59	4.90	TONGA IS	12
9	7	8	43	26	8.8S	117.5E	81			4.98	4.72	SUMBAWA	24
9	7	8	44	35	13.2S	122.1E	256					FLORES SEA	38
9	7	8	52	58	11.7S	13.6W	33		5.2	5.55	5.07	ASCENSION IS	32
9	7	12	44	1	54.0N	160.3E	110	6.2	5.4	5.88	5.24	KAMCHATKA	19
9	7	13	44	52	7.1S	148.1E	64		4.8	5.14	4.85	E NEW GUINEA COAST	16
9	7	15	14	55	22.0S	179.6W	558			4.73	4.70	FIJI IS	12
9	7	18	50	11	22.7S	65.1W	160		4.0	3.89	4.60	ARGENTINA	8
9	7	19	26	29	3.0S	130.4E	33		4.6	5.06	4.80	CERAM SEA	23
9	7	20	1	26	26.7S	178.0W	263		4.1	4.31	4.43	TONGA IS	39
9	7	22		57	27.8N	141.5E	50	5.9	4.9	5.52	5.34	GUIN IS	18
9	8		47	28	28.1S	174.8W	57		5.3	5.82	4.94	KERMADEC IS	12
9	8	4	41	20	14.1S	178.4W	520			5.67	5.20	FIJI IS	12
9	8	5	28	38	12.2N	87.9W	31					EL SALVADOR	6
9	8	5	32	26	23.7S	179.1E	282		4.6	5.13	4.66	FIJI IS	12
9	8	7	28	15	2.7S	178.3W	573		4.3	5.02	4.76	FIJI IS	12
9	8	9	6	14	24.2S	100.5W	33		4.7	5.75	5.06	SE OF EASTER IS	43
9	8	13	6	26	2.2S	177.8W	33			5.92	5.45	KERMADEC IS	12
9	8	17	22	30	19.6N	109.4W	33		3.9	3.97	3.70	JALISCO MEXICO COAST	5
9	8	17	29	48	21.9S	174.6W	33		4.4	5.17	4.80	TONGA IS	12
9	8			20	21.6S	179.8E	550		5.7	6.20	5.44	FIJI IS	12
9	8	23	26	25	21.1S	180.0E	306		4.2	4.35	4.30	S OF KERMADEC IS	12
9	9		19	3	22.6S	177.0W	33		4.7	5.43	4.92	FIJI IS	12
9	9	2	45	46	4.4S	152.7E	34	5.3		5.11	5.41	NW BRITAIN	19
9	9	5	18	37	49.8N	130.0W	33		3.2			ANTARCTIC IS	2

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	9	10	45	20	44.4N	114.6W	33		4.1			CENTRAL IDAHO	34
9	9	12	21	20	12.3N	141.3E	76		4.6	4.59	4.78	MARIANA IS	17
9	9	12	52	15	14.7S	167.4E	182		4.4	4.89	4.76	NEW HEBRIDES IS	14
9	9	17	58	33	23.5S	180.0E	512		4.8	5.08	5.06	FIJI IS	12
9	9	18	50	47	43.9N	113.3W	33					CENTRAL IDAHO	34
9	9	19	7	19	44.3N	114.6W	33		3.8			CENTRAL IDAHO	34
9	9	19	10	37	44.4N	114.8W	33		4.1			CENTRAL IDAHO	34
9	9	21	11	6	31.7S	178.4W	33		4.5	6.14	5.40	KERMADEC IS	12
9	9	21	41	44	31.3N	72.1E	33		4.7	4.00	4.40	PAKISTAN	47
9	10	1	9	47	14.0S	166.2E	64		4.6	4.99	4.93	NEW HEBRIDES IS	14
9	10	2	17	11	43.3N	114.7W	33		4.3			CENTRAL IDAHO	34
9	10	3	33	25	44.4N	114.7W	33		4.1			CENTRAL IDAHO	34
9	10	5	31	3	23.6S	178.9E	268		4.5	4.07	4.90	FIJI IS	12
9	10	6	25	14	23.0S	179.8E	520		4.8	5.07	4.87	FIJI IS	12
9	10	7	36	9	14.6S	73.6W	176		4.0	2.72	3.90	S PERU	8
9	10	11	29	33	59.3N	151.6W	30		4.2			KENAI PENINSULA	1
9	10	13	9	13	36.1N	27.3E	50		4.5	3.81	4.13	DUDECANSE IS	8
9	10	14	13	12	.1N	123.2E	160			4.72	4.00	N CELEBES	23
9	10	17	1	7	53.8N	159.9W	33		5.0	5.24	4.80	ALASKA PENINSULA	1
9	10	18	3	31	55.2N	157.1W	33		4.1			ALASKA PENINSULA	1
9	10	19	14	27	19.0S	175.8E	33		5.3	5.00	4.76	TONGA IS	12
9	10	19	40	8	28.9N	104.0W	33		4.2	4.56	4.30	CHIHUAHUA MEXICO	34
9	10	23	56	26	3.4S	131.4E	64		4.8	5.87	5.13	CERAM REGION	23
9	11	00	12	30	44.3N	114.7W	33		4.4			CENTRAL IDAHO	34
9	11	00	57	59	12.3N	59.5W	33		4.2			WINDWARD IS	7
9	11		53	12	4.1S	151.8E	205		4.5	5.55	5.10	NEW BRITAIN	15
9	11	2	8	45	44.3N	114.7W	15		4.9	4.29	4.68	CENTRAL IDAHO	34
9	11	2	25	7	44.3N	114.8W	33		3.6			CENTRAL IDAHO	34
9	11	2	31	42	44.4N	114.7W	33		4.2			CENTRAL IDAHO	34
9	11	3	20	8			33			3.35	4.60	LOCAL IST 4.2	30
9	11	3	45	36	44.4N	114.8W	33		4.1			CENTRAL IDAHO	34
9	11	3	55	40	44.4N	114.8W	33					CENTRAL IDAHO	34
9	11	6	4	28	38.9N	118.1W	33					W NEVADA	3
9	11	6	31	55	19.0S	169.3E	245		4.5	4.32	4.56	NEW HEBRIDES IS	37
9	11	8	59	38	3.5S	131.2E	33		5.7	5.73	5.26	E CERAM	23
9	11	9	42	7	44.3N	114.8W	33		4.0			CENTRAL IDAHO	34
9	11	9	49	6	16.8N	95.1W	129		3.8	3.25	4.50	OAXACA MEXICO	5
9	11	11	45	38	18.5S	177.8W	611		3.7	2.71	4.33	FIJI IS	12
9	11	11	59	41	33.2N	110.7W	33		4.1	5.77	3.90	ARIZONA	34
9	11	12	29	31	44.3N	114.7W	33		3.8			CENTRAL IDAHO	34
9	11	15	11	16	3.6S	127.4E	205			4.42	4.30	E CERAM SEA	23
9	11	16	21	53	44.2N	114.6W	33		3.8			CENTRAL IDAHO	34
9	11	16	24	31	44.3N	114.7W	33		4.1			CENTRAL IDAHO	34
9	11	20	34	50	44.5N	114.8W	33		3.5			CENTRAL IDAHO	34
9	11	22	20	27	33.1S	178.2W	21		4.9	5.26	4.80	S OF KERMADEC IS	12
9	11	23	40	52	40.8N	112.0W	33		3.8			N UTAH	34
9	12	2	28	53	22.0S	67.6W	160		4.5	4.29	4.90	CHILE-BOLIVIA BORDER	8
9	12	3	11	54	22.5S	170.7E	54		4.9	5.36	5.06	LOYALTY IS	14
9	12	3	26	14	13.2S	166.5E	68		4.4	4.67	4.76	SANTA CRUZ	14
9	12	6	23	32	44.2N	114.8W	33		4.4	3.58	4.62	CENTRAL IDAHO	34
9	12	6	53	1	44.2N	114.5W	33		4.1			CENTRAL IDAHO	34
9	12	7	25	2	51.6N	177.4E	40		4.4			RAT IS	1
9	12	8	1	23	44.4N	114.7W	33		4.3			CENTRAL IDAHO	34
9	12	8	18	58	34.9N	32.2E	55	5.0	5.0	4.97	3.90	CYPRUS	30
9	12	9	1	11	44.3N	114.8W	33		3.6			CENTRAL IDAHO	34
9	12	9	19	7	44.3N	115.0W	33		3.7			CENTRAL IDAHO	34
9	12	9	59	45	47.0N	152.6E	60		4.3			KURILE IS	19
9	12	11	12	3	8.2S	164.4E	33		4.2	3.94	4.00	SANTA CRUZ IS	15
9	12	11	16	49	44.4N	114.7W	33		4.3			CENTRAL IDAHO	34
9	12	12	28	25	44.4N	114.8W	33		4.2			CENTRAL IDAHO	34

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	12	13	10	18	7.7N	35.9W	33		5.0	5.15	4.93	N ATLANTIC OCEAN	32
9	12	14	10	58	19.0S	175.9E	33		4.6	4.74		FIJI IS	13
9	12	20	15	8	44.4N	114.8W	33		4.0			CENTRAL IDAHO	34
9	13	7	46	36	13.5S	166.4E	38		4.4	3.94	4.00	SANTA CRUZ IS	15
9	13	10	7	23	12.5S	167.3E	83		4.5	4.27	4.30	SANTA CRUZ IS	14
9	13	10	51	57	29.1N	105.6W	33		4.7	4.50	4.35	CHIHUAHUA MEXICO	34
9	13	13	43	14	45.0N	111.6W	33					SW MONTANA	34
9	13	18	15	54	49.6S	117.2E	33			4.39	4.40	S AUSTRALIA	33
9	13	21	10	56	33.3S	178.1W	33		5.1	5.49	5.00	KERMADEC IS	12
9	13	23	2	7	53.0N	175.0W	220		4.9	5.26	4.95	ANDREANOF IS	1
9	13	23	33	33	31.3S	179.3W	16		4.7	5.06	4.70	KERMADEC IS	12
9	13	23	57	37	21.4S	169.1E	33					LOYALTY IS	14
9	14		15	45	3.5S	131.2E	33		4.4	5.16	4.82	CERAM REGION	16
9	14		18	33	3.6S	131.2E	33		5.8	5.56	5.13	CERAM REGION	16
9	14		38	8	31.3S	179.1W	33		5.1	6.06	5.23	KERMADEC IS	12
9	14	2	13	41	22.0N	121.3E	90		5.0	5.20	4.94	S FORMOSA	21
9	14	3	51	14	33.3N	118.6W	14		4.8	3.70	4.80	S CALIFORNIA COAST	3
9	14	3	52	17	31.4S	179.0W	33	6.2	4.9	5.92	5.10	KERMADEC IS	12
9	14	5	4	11	44.3N	114.9W	33		3.7			CENTRAL IDAHO	34
9	14	5	7	16	44.4N	114.7W	33		3.6			CENTRAL IDAHO	34
9	14	5	46	40	14.6S	166.6E	70					NEW HEBRIDES	14
9	14	6	45	8	42.2N	142.3E	50		4.3	4.67	4.40	S HOKKAIDO COAST	19
9	14	7	17	16	19.0N	145.0E	610	6.2	5.0	5.54	4.90	MARIANA IS	18
9	14	9	26	47	25.5N	142.6E	43		4.5	4.78	4.55	VOLCANO	18
9	14	9	43	52	15.0N	91.0W	130		4.1			GUATEMALA	5
9	14	10	6	18	36.1N	137.3E	66		4.3			HONSHU	19
9	14	11	48	18	20.1S	68.2W	33		4.4			BOLIVIA-CHILE	8
9	14	12	26	15	35.6N	118.1W	14		4.2			CALIFORNIA	3
9	14	15	15	58	13.7S	166.4E	34		4.3	4.18	4.50	SANTA CRUZ IS	14
9	14	15	25	33	13.7S	166.3E	20		4.7	4.81	4.60	NEW HEBRIDES IS	14
9	14	15	58	4	44.2N	114.8W	33		4.3	3.82	4.90	IDAHO	34
9	14	16	6	42	44.3N	114.7W	33		3.9			IDAHO	34
9	14	16	16	52	33.6S	126.7W	33		4.9	5.50	4.85	S PACIFIC OCEAN	39
9	14	16	25	13	44.3N	114.7W	33		4.3			IDAHO	34
9	14	16	32	43	44.4N	114.7W	33		4.0			IDAHO	34
9	14	16	55	43	44.4N	114.7W	33		3.9			IDAHO	34
9	14	17	16	57	44.2N	114.8W	33		3.8			IDAHO	34
9	14	17	53	10	44.5N	114.7W	33		4.0			IDAHO	34
9	14	18	48	58	44.3N	114.7W	33		3.8			IDAHO	34
9	14	19	46	16	36.7N	121.8W	15		5.4			CALIFORNIA	3
9	14	20	28	4	36.7N	122.0W	15		4.3			CALIFORNIA	3
9	15		46	54	10.3S	165.6E	43	7.2	6.3	6.90	6.02	SANTA CRUZ IS	39
9	15		57	24	9.4S	167.0E	33		5.0	4.92	5.15	SANTA CRUZ IS	15
9	15	2	2	6	32.0S	178.7W	33		4.7			KERMADEC	12
9	15	4	27	3	55.5S	140.5W	33		4.4	5.42	5.00	S PACIFIC OCEAN	43
9	15	4	50	22	10.2S	165.3E	31		4.5	4.19	4.10	SANTA CRUZ IS	14
9	15	5	35	30	44.1N	114.8W	33		3.9			IDAHO	34
9	15	5	15	22	10.2S	165.4E	28		4.7	3.53	3.90	SANTA CRUZ IS	14
9	15	6	28	44	10.1S	165.5E	33		4.5	4.46	4.50	SANTA CRUZ IS	14
9	15	8	26	4	5.9S	145.7E	69		4.7	4.94	5.00	NE NEW GUINEA	16
9	15	8	31	10	31.4S	179.3W	33		4.6	5.62	4.40	KERMADEC IS	12
9	15	8	5	9	13.5S	166.4E	36		4.5	4.80	4.53	SANTA CRUZ IS	14
9	15		7	38	1.2S	106.5E	33		5.0	4.98	4.80	JAVA	24
9	15	10	48	3	35.7N	117.8W	15					CALIFORNIA	3
9	15	10	59	48	17.1S	173.8E	33		4.8	5.25	4.90	FIJI IS	13
9	15	11	44	45	10.0S	165.1E	30		4.3	4.15	4.25	SANTA CRUZ IS	14
9	15	14	51	4	44.4N	114.8W	33		4.1			IDAHO	34
9	15	19	14	11	44.2N	114.8W	33		3.7			IDAHO	34
9	15	20	29	50	25.2N	141.0E	33		4.3			VOLCANO IS	18
9	15	23	13	56			33			4.70	5.10	LOCAL ARE 6.0	8



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	15	22	3	50	63.2N	152.0W	122		3.9			CENTRAL ALASKA	1
9	16		6	51	22.4N	120.5E	33		4.8	3.94	4.20	S FORMOSA	21
9	16	1	49	14	10.2S	165.3E	33		4.7	4.87	4.68	SANTA CRUZ IS	39
9	16	6	19	46			33			4.60	5.40	LOCAL ARE 6.6	8
9	16	6	36	56	49.6N	149.9E	430		3.6			UKHOTSK SEA	46
9	16	9	43	55	55.0N	166.0E	33		4.7	4.34	4.36	KOMANDORSKI IS	1
9	16	12	6	16	44.2N	114.7W	33		4.2	2.77	4.10	CENTRAL IDAHO	34
9	16	15	11	52	52.8N	171.0W	140		4.2	3.92	4.00	ANDREANOF IS	1
9	16	16	14	45	78.6N	6.7E	33		4.3	4.34	4.20	SVALBARD REGION	40
9	16	16	36	32	13.4S	166.6E	28		4.4	4.87	5.50	NEW HEBRIDES IS	14
9	16	17	15	34	43.2N	126.8W	33		4.7			OFF OREGON COAST	34
9	16	20	5	22	13.4S	166.5E	28		5.0	5.40	5.05	SANTA CRUZ IS	39
9	17		22	59	50.2N	129.3W	33		4.0			VANCOUVER IS	2
9	17		43	33	25.1S	67.4W	33		4.2	3.56	4.70	ARGENTINA	8
9	17	2	22	49	15.3S	72.6W	143		3.5	3.12	4.50	S PERU	8
9	17	3	48	10	12.6N	87.1W	144		3.9			NICARAGUA	6
9	17	5	36	17	44.3N	114.8W	33		4.1			CENTRAL IDAHO	34
9	17	5	54	34	10.6S	78.2W	61	6.7	5.5	6.11	5.35	CENTRAL PERU	8
9	17	7	34	39	1.5S	77.9W	178		4.0	5.25	5.07	ECUADOR	8
9	17	12	22	57	44.4N	114.7W	33		3.6			CENTRAL IDAHO	34
9	17	19	20	8	10.1S	165.3E	17	7.3	6.1	7.03	5.38	SANTA CRUZ IS	14
9	17	19	57	40	10.1S	165.0E	36		4.8	5.53	4.73	SANTA CRUZ IS	14
9	17	20		57	9.9S	164.7E	33		5.3	5.80	5.30	SANTA CRUZ IS	39
9	17	20	32	58	43.4S	74.7W	33		4.8	5.26	4.76	S CHILE COAST	9
9	17	21	13	28	6.7S	105.3E	33		5.3	5.34	4.85	JAVA	24
9	17	22	28	30	10.2S	165.1E	33		5.2	5.57	4.99	SANTA CRUZ IS	39
9	17	22	33	50	10.0S	164.9E	33		4.7			SANTA CRUZ IS	15
9	17	23	50	54	10.6S	165.3E	73		4.7	3.63	4.00	SANTA CRUZ IS	14
9	18	00	16	8	44.3N	114.8W	33		3.7			CENTRAL IDAHO	34
9	18	1	16	53	10.1S	165.1E	33		4.9	4.86	5.03	SANTA CRUZ IS	15
9	18	1	55	46	10.7S	165.1E	28		5.0	5.32	5.04	SANTA CRUZ IS	14
9	18	4		24	10.2S	165.2E	33		4.1	3.62	4.80	SANTA CRUZ IS	39
9	18	4	45	8	44.9N	111.6W	33		3.1			SW MONTANA	34
9	18	8	2	21	10.3S	165.6E	33		4.6	4.41	5.00	SANTA CRUZ IS	15
9	18	9	14	36	14.8S	167.4E	119		4.5	4.38	4.40	NEW HEBRIDES IS	14
9	18	15	42	3	38.5N	57.2E	33		5.1	4.59	4.70	TURKMEN SSR	29
9	18	16	58	12	40.9N	29.2E	33	6.1	5.2	5.78	5.07	TURKEY	30
9	18	17	18	1	3.3S	139.9E	90		5.8	5.08	4.98	W NEW GUINEA	16
9	18	20	37	52	3.8S	134.7E	32		5.2	4.39	4.46	W NEW GUINEA	16
9	18	21	3	53	44.4N	114.8W	33		3.8			CENTRAL IDAHO	34
9	18	22	31	23	69.3N	67.8W	33		3.9			GAFFIN IS	42
9	19		6	43	2.6S	78.0W	33		4.3	5.07	4.73	LCUADOR	8
9	19	3	2	8	44.5N	114.7W	33		3.9			CENTRAL IDAHO	34
9	19	4	8	17			33			3.43	4.40	LOCAL NNA 3.9	8
9	19	5	54	8	22.5S	67.5W	233		4.3	3.86	4.20	BOLIVIA-ARGENT-CHILE	8
9	19	8	59	41	22.0S	179.6W	563		4.1	4.93	4.75	FIJI IS	13
9	19	11			44.3N	114.9W	33		3.4			CENTRAL IDAHO	34
9	19	16	31	15	31.0N	66.8E	37		4.2	3.69	4.00	AFGHANISTAN-PAKISTAN	29
9	19	16	49	30	47.1N	27.4W	33					N ATLANTIC	47
9	19	18	55	58	19.7S	177.7W	536		3.5	4.43	4.30	FIJI IS	13
9	19	19	29	17	15.2S	167.6E	161		4.3	5.15	4.86	NEW HEBRIDES IS	14
9	19	21	10	18	18.1S	69.3W	174		4.2	3.07	4.00	CHILE-BOLIVIA-PERU	8
9	19	23	57	58	0.2S	124.0E	122		5.6	5.44	5.20	N CELEBES	23
9	20	2	21	29	17.4S	69.6W	154		3.7	2.45	4.05	CHILE-BOLIVIA-PERU	8
9	20	3	3	33	76.5N	7.9E	33		4.7	4.95	4.78	SVALBARD REGION	40
9	20	4		36	11.3S	77.6W	33		4.5	4.36	4.70	NEAR PERU COAST	8
9	20	7	25	12	21.5S	68.3W	125		4.7	4.85	4.70	BOLIVIA-CHILE BORDER	8
9	20	11	09	39	44.3N	114.8W	33		3.8			CENTRAL IDAHO	34
9	20	11	41	22	44.4N	114.7W	33		3.7			CENTRAL IDAHO	34
9	20	14	41	23	21.5S	68.0W	155		4.8	4.57	4.58	CHILE-BOLIVIA	8

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	20	19	2	15	1.6N	127.1E	97		5.1	5.27	4.87	MOLUCCA SEA	23
9	20	22	11	32	17.8S	68.8W	171		5.1	5.49	5.00	PERU-BOLIVIA	8
9	21		41	57	37.1N	95.4E	33		4.6	3.85	3.75	TSINGHAI CHINA	27
9	21	3	55	27		119.7E	47		4.4	5.08	4.55	N CELEBES	23
9	21	4	32	44	37.2N	121.7W	14		4.2			CALIFORNIA	3
9	21	9	17	25	40.4N	140.0E	179		4.4	4.36	4.20	NEAR E HONSHU COAST	19
9	21	9	59		44.3N	114.8W	33		3.9			IDAHO	34
9	21	12	29	26	43.7N	114.7W	33		3.5			IDAHO	34
9	21	16	24	24	19.2N	155.5W	5		4.6	3.85	4.30	HAWAII	39
9	21	16	28	5	23.0S	179.8E	483		4.6	4.53	4.42	FIJI IS	13
9	21	16	53	28	54.9N	161.5E	33		4.5	4.16	4.20	E KAMCHATKA COAST	19
9	21	18	23	32	24.2N	125.1E	33		4.3	4.10	4.30	RYUKYU IS	20
9	22		50	38	44.3N	114.8W	33		3.9	3.32	4.60	IDAHO	34
9	22		56	14	44.5N	114.7W	33		4.2			IDAHO	34
9	22	2	16	9	16.3S	178.5E	33		4.8	4.92	5.30	FIJI IS	13
9	22	2	49	3	52.5N	174.9W	105		4.8	5.29	5.04	ANDREANOF IS	1
9	22	2	56	24	19.3S	175.9E	28		5.8	6.07	5.41	FIJI IS	13
9	22	3	28	54	36.1N	71.5E	147			4.99	5.00	HINDU KUSH	47
9	22	4	37	15	44.3N	111.4W	33					IDAHO	34
9	22	6		11	17.8S	168.0E	33		4.1			NEW HEBRIDES	14
9	22	6	30	35	44.3N	114.8W	33		3.6			IDAHO	34
9	22	8	58	11	43.3N	111.5W	33					SE IDAHO	34
9	22	9	37	00	22.7S	65.7W	203		3.8	4.40	5.20	ARGENTINA	8
9	22	9	56	43	43.4N	111.5W	33		3.7			IDAHO	34
9	22	10	40	56	29.3N	55.3E	33		4.7	4.78	4.66	S IRAN	29
9	22	11	23	5	5.2S	150.6E	45		5.2	4.24	4.65	NEW BRITAIN	15
9	22	13	19	47			33			4.67	5.40	LOCAL SHI 7.5	29
9	22	14	55	3	44.4N	114.9W	33		4.1			IDAHO	34
9	22	15	41	21	44.4N	114.8W	33		4.0			IDAHO	34
9	22	15	58	6	41.9N	126.7W	33		4.3	3.76	4.60	N COAST CALIFORNIA	3
9	22	17	6	7	43.3N	111.2W	33		3.9		3.30	IDAHO	3
9	22	19	21	57	19.2S	175.9E	24		5.5	5.61	5.31	TONGA IS	12
9	22	19	28	42	10.3S	165.1E	33		4.7	3.87	4.56	SANTA CRUZ IS	14
9	22	20	33	48	62.9N	148.8W	53		4.0			ALASKA	1
9	22	21	13	36	44.3N	114.6W	33		3.9	2.81	4.00	IDAHO	34
9	22	21	30	57	43.3N	111.6W	33					IDAHO	34
9	22	21	32	17	43.2N	111.3W	33		3.4			IDAHO	34
9	22	22	32	10	37.5N	20.6E	33		4.6	3.84	4.10	IONIAN SEA	30
9	22	22	36	24	42.0N	126.5W	33		4.3			CALIFORNIA	3
9	23		28	56	19.0S	169.7E	217		4.1	5.94	5.70	NEW HEBRIDES IS	14
9	23	1	30	33	43.2N	111.2W	33		3.5			SE IDAHO	34
9	23	5	37	40	7.3S	122.1E	543		5.0	4.64	4.35	FLORES SEA	23
9	23	6	40	36	16.6S	28.6E	33		5.5	5.67	5.26	N RHODESIA	37
9	23	8	10	35	16.7S	28.7E	33			4.68	4.55	N RHODESIA	37
9	23	9	1	57	16.6S	28.8E	33		5.8	6.40	5.72	N RHODESIA	37
9	23	9	58	46	5.6S	153.8E	60		5.1	5.44	5.25	NEW BRITAIN	15
9	23	10	21	6	44.4N	114.8W	33		3.6			IDAHO	34
9	23	10	36	57	21.6S	68.3W	33		4.3	3.51	3.80	CHILE-BOLIVIA	8
9	23	12	17	11	44.4N	114.8W	33		3.9			IDAHO	34
9	23	14	41	52	33.7N	117.0W	14	4.9	4.3	3.64	4.50	RIVERSIDE CO CALIF	3
9	23	15	2	23	16.7S	28.4E	33			5.59	4.85	N RHODESIA	37
9	23	17	2	37	51.3N	179.2W	33		5.2	5.53	5.15	ANDREANOF IS	1
9	23	18	33	47	29.6N	50.9E	39		4.7	3.37	3.93	PERSIAN GULF	29
9	23	21	11	29	16.1S	71.9W	126		3.8	3.64	4.80	S PERU	8
9	23	22	23	38	16.6S	28.7E	33		5.5	5.41	5.08	N RHODESIA	37
9	23	23	14	43	16.1S	174.8W	252		4.0	3.70		TONGA IS	12
9	23	23	27	10	43.3N	111.5W	33					IDAHO	34
9	24	2	10	45	41.0N	29.0E	33		4.6	3.87	4.10	TURKLY	30
9	24	5	33	31	17.8N	100.9W	33		4.2	3.83	3.90	W GUERRERO MEXICO	5
9	24	6	31	51	44.8N	111.0W	33		3.1			YELLOWSTONE PARK	34

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	24	6	35	52	44.9N	111.0W	33		4.7			YELLOWSTONE PARK	34
9	24	7	12	40	17.4N	105.6W	33		4.0	3.09	3.30	W MEXICO COAST	5
9	24	7	55	41	15.8S	13.3W	33		5.2	5.13	4.66	S ASCENSION IS	32
9	24	8	30	2	28.6S	68.4W	94		4.9	4.79	4.95	LA RIOJA ARGENTINA	8
9	24	9	13	38	16.6S	28.7E	33			5.28	5.05	N RHODESIA	37
9	24	13	28	20	34.2N	116.4W	14					CALIFORNIA	3
9	24	15	45	25	10.5S	164.6E	33		4.6	3.85	4.08	SANTA CRUZ IS	15
9	24	16	30	16	10.6S	78.0W	80	6.7	6.0	6.79	5.55	OFF PERU COAST	8
9	24	17	5	28	43.2N	111.1W	33					IDAHO	34
9	24	22	8	32	10.3S	164.6E	33		5.0	4.72	4.27	SANTA CRUZ IS	15
9	24	22	21	58	10.6S	165.1E	75		4.3	3.80	3.90	SANTA CRUZ IS	15
9	24	22	57	8			33			3.95	3.60	LOCAL PMG 3.7	16
9	24	23	8	56	10.5S	164.7E	42		4.5	3.95	4.10	SANTA CRUZ IS	15
9	25		47	38	16.5N	86.6W	33		4.3	4.52	4.10	OFF N HONDURAS COAST	5
9	25	1	9	40	16.6N	87.1W	33		4.2	5.04	4.60	HONDURAS	7
9	25	6	11	21	10.5S	164.5E	34		4.3	3.53	4.02	SANTA CRUZ IS	15
9	25	7	3	55	16.7S	28.7E	33		5.8	6.35	5.77	N RHODESIA	37
9	25	9	27	5			33			3.48	4.40	LOCAL ARE 4.8	8
9	25	12	46	42	15.2S	167.4E	122		4.3	4.96	4.90	NEW HEBRIDES IS	14
9	25	12	51	14	15.2S	167.4E	122		4.3	4.68	4.60	NEW HEBRIDES IS	14
9	25	13	21	31	10.5S	164.6E	33		4.4	3.78	4.18	SANTA CRUZ IS	39
9	25	13	44	22	10.3S	164.4E	43		4.7	3.85	4.35	SANTA CRUZ IS	15
9	25	14		55	10.2S	164.6E	33		4.9	4.20	4.56	SOLOMON IS	15
9	25	14	23	48	9.8S	164.5E	33		4.6	4.11	4.20	SANTA CRUZ IS	15
9	25	14	50	18	10.1S	164.5E	33		5.1	5.30	4.85	SOLOMON IS	15
9	25	15	1	37	10.4S	164.4E	51		4.7	3.86	4.30	SANTA CRUZ IS	15
9	25	15	42	47	10.5S	164.5E	19		4.3	4.23	4.53	SANTA CRUZ IS	15
9	25	20	57	15	10.5S	164.7E	36		4.6	4.49	4.44	SANTA CRUZ IS	15
9	26	1	11	34	10.4S	164.6E	33		4.3	3.47	4.00	SANTA CRUZ IS	15
9	26	4	20	22	56.5N	153.4W	33		4.8	4.81	4.75	KODIAK IS	1
9	26	5	28	7	50.4N	176.9W	33		5.3	5.80	5.05	ANDREANUF IS	1
9	26	5	55	10	5.6S	148.0E	156		4.9	4.84	4.82	NEW BRITAIN	15
9	26	6	43	44	56.6N	153.2W	33		4.8	4.56	4.10	KODIAK IS	1
9	26	10	53	57	17.4S	178.8W	512		4.0	4.42	4.65	FIJI IS	13
9	26	20	35	54	3.3S	141.9E	33		5.3	5.25	5.05	E NEW GUINEA COAST	16
9	26	22	31	39	47.1N	12.1E						GERMANY	36
9	27	7	54	11	12.9S	171.5W	33		4.0			SAMOA	13
9	27	10	4	5	10.8N	62.2W	104		4.6	4.10	4.60	N OF VENEZUELA	7
9	27	10	28	4	17.1S	174.6E	33		4.9	4.90	4.67	FIJI IS	13
9	27	11	4	17	11.3N	126.0E	17		5.3	5.33	5.08	E OF LEYTE	22
9	27	11	25	54	17.2S	174.7E	33		5.0	5.35	4.90	FIJI IS	13
9	27	14	49	32	21.3S	179.0W	345		4.1			FIJI IS	12
9	27	16	26	50	37.0N	141.3E	81		4.1	4.56	4.50	E HONSHU COAST	19
9	27	16	46	12	32.6N	115.5W	33		3.5	3.19	4.00	CALIFORNIA	3
9	27	17	9	33	27.9N	66.1E	88		4.7	4.68	4.30	W PAKISTAN	47
9	27	17	28	11	2.9N	126.6E	99		5.5	4.92	4.75	MOLUCCA PASSAGE	23
9	27	18	4	38	45.6N	149.5E	80		4.7	3.48	3.65	KURILE IS	19
9	27	22	20	7	.1S	18.4W	23		5.0	4.99	5.00	ATLANTIC OCEAN	32
9	28		33	55	49.8S	125.9E	33			4.90	4.30	S OF AUSTRALIA	33
9	28	3	1	12	20.5S	174.3W	33		4.5	5.02	5.02	TONGA IS	12
9	28	3	30	49	14.3S	13.7W	33		5.0	5.35	4.93	S OF ASCENSION IS	32
9	28	5	25	3	10.2N	86.0W	33		4.1	4.11	4.35	W COSTA RICA COAST	5
9	28	5	25	26	17.8S	178.6W	548		4.0	5.02	5.00	FIJI IS	13
9	28	6		25	22.9N	94.5E	108		5.6	5.87	5.00	W BURMA	25
9	28	6	52	13	31.5S	179.6E	457		5.0	5.51	5.11	NLMADEC IS	12
9	28	10	3	53	44.8N	129.9W	33		3.7	3.51	4.07	OFF UKUGON COAST	3
9	28	11	4	14	39.3N	136.0E	351		3.8			SEA OF JAPAN	19
9	28	11	6		18.1S	177.9W	604		3.9	4.38	4.51	FIJI IS	12
9	28	14	3	54	59.6N	156.2W	33		4.4			CENTRAL ALASKA	1
9	28	18	42	25	3.5S	102.0E	29		5.6	4.71	4.48	SUMATRA COAST	24

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
9	28	19	8	3	43.3N	111.3W	33		3.7		3.50	IDAHO	34
9	28	23	11	1	13.4S	166.3E	53		4.7	4.96	5.60	NEW HEBRIDES IS	14
9	29			34	28.3N	112.0W	33		4.0	2.13	3.80	GULF OF CALIF	4
9	29	1	6	4	17.7S	179.0W	649		3.9	5.05	4.90	FIJI IS	13
9	29	2	55	5	62.0S	163.5E	33			4.58	4.75	BALLENY IS REGION	45
9	29	5	58	23	43.5N	111.3W	33		3.6			IDAHO	34
9	29	6	5	32	43.3N	111.5W	33					SE IDAHO	34
9	29	7	8	46	44.9N	3.0E						FRANCE	31
9	29	10	6	43	28.8S	177.8W	116		3.1	4.95	4.70	KERMADEC IS	12
9	29	10	39	58	36.4N	70.4E	214		4.8	4.32	4.60	HINDU KUSH	48
9	29	11	24		19.3S	177.9W	205		3.8	4.51	4.40	FIJI IS	12
9	29	13	35	45	36.6N	29.2E	33		4.5	4.37	4.48	N TURKEY COAST	30
9	29	14	45	57			33			4.11	4.80	LOCAL ARE 6.1	8
9	29	15	31	31	36.1N	72.0E	150		4.9	3.85	4.40	HINDU KUSH	48
9	29	18	16	21	.1S	130.4E	33			4.48	4.40	SPICE IS	16
9	29	19	31	23	13.5N	57.5E	33			4.88	4.06	ARABIAN SEA	33
9	29	19	35	2	5.0N	125.3E	117		5.3	5.47	5.05	MINDANAO	22
9	29	20	31	10	21.6N	142.9E	325		4.6	4.93	4.87	VOLCANO IS	18
9	29	21	58	23	6.9N	73.0W	157		4.0	3.44	4.65	COLOMBIA	7
9	29	22	16	34	36.1N	18.0E	47		5.3	5.72	5.31	IONIAN SEA	31
9	29	22	44	3	14.4N	91.9W	61	5.1	5.1	4.95	4.82	GUATEMALA	5
9	29	23	5	23	14.3N	92.0W	33		4.4			GUATEMALA	5
9	29	23	8	21	14.5N	92.0W	42		4.5			GUATEMALA	5
9	30		16	36	8.7S	108.6E	33		5.1			S JAVA	24
9	30	1	12	29	7.0S	130.3E	97					BANDA SEA	24
9	30	2	53	15	14.3N	92.1W	33		4.1			GUATEMALA	5
9	30	3	5	38	14.1N	91.9W	86		4.5			W GUATEMALA COAST	5
9	30	3	46	51	7.3N	76.9W	33		4.6	3.82	4.73	COLOMBIA	6
9	30	6	35	44	28.2N	111.3W	33		4.2			CALIF GULF	4
9	30	8	54	15	1.3S	128.5E	30		4.9	5.01	4.70	CERAM SEA	23
9	30	9	17	42	38.0N	111.0W	33		4.5	4.19	4.40	S UTAH	34
9	30	9	47	28	14.7N	177.5W	362		4.2	3.87	4.90	SAMOA IS	12
9	30	12	16	7	7.2N	73.6W	116		3.9			COLOMBIA	7
9	30	12	36	25	52.5N	169.5W	33		4.1	5.37	4.90	FOX IS	1
9	30	14	1	21	12.9N	89.0W	65					EL SALVADOR	6
9	30	15	47	46	2.2S	134.1E	135		4.7	4.53	4.61	W NEW GUINEA	16
9	30	22	59	53	9.4N	142.3E	33		4.4	4.14	4.53	MARIANA IS	17

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	1	2	43	27	6.8N	73.1W	132		4.6			COLOMBIA	7
10	1	3	9	40	14.5S	167.5E	170			3.81	4.26	NEW HEBRIDES IS	39
10	1	5	22		18.5N	145.2E	225		4.4	4.54	4.40	MARIANA IS	18
10	1	5	9	48	83.8N	7.3W	33		4.2	2.30	3.90	ARCTIC OCEAN	40
10	1	10	30	32	10.2N	84.5W	46		4.6	4.92	4.80	COSTA RICA	6
10	1	13	22	25	52.6N	168.1W	33		3.9			FOX ISLANDS	1
10	1	17	21	5			33			3.93	5.00	LOCAL ATU 5.7	30
10	1	17	21	54	36.1N	22.3E	106		4.6	3.59	4.20	S GREECE	30
10	2	3	31	27	5.4S	152.0E	65		5.6	5.30	4.94	NEW BRITAIN	15
10	2	5	47	6	20.8S	174.1W	33		5.3	5.73	4.86	TONGA IS	12
10	2	9	19	14	23.5S	179.7W	626		3.9	4.61	4.50	FIJI IS	12
10	2	9	51	41	36.3N	142.4E	48		4.1	3.99	4.40	OFF E HONSHU COAST	19
10	2	15	51	48	1.7S	76.0W	176		3.7			ECUADOR	8
10	2	16	40	15			33			3.15	3.80	LOCAL NNA 3.7	6
10	2	16	57	48	20.0S	175.1W	33		4.3	4.31	4.80	TONGA IS	12
10	2	21	5	3			33			4.43	5.30	LOCAL ATU 3.7	30
10	2	21	5	15	35.1N	23.5E	72		4.5	4.33	4.58	W COAST OF CRETE	30
10	3	1	22	41	18.3N	105.6W	33		4.2	4.99	4.75	OFF COLIMA MEX COAST	5

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	3	5	27	59	10.1N	62.5W	62			2.82	3.85	VENEZUELA COAST	7
10	3	5	32	18	22.3N	121.1E	55		4.4	4.49	4.30	FORMOSA	21
10	3	6	38	32	3.4S	135.7E	78		5.4	4.50	4.45	W NEW GUINEA	16
10	3	7	52	25	30.5S	177.6W	33		4.5	5.04	4.70	KERMADEC IS	12
10	3	10	7	21						3.08	3.50	LOCAL ATU 1.3	30
10	3	13	53	44	15.3S	173.4W	36		4.3			TONGA IS	12
10	3	15	48	17	58.5S	25.1W	54	5.9		5.72	5.03	SANDWICH IS	10
10	3	17	55	54	58.6S	25.5W	33		5.5	6.07	5.50	SANDWICH IS	10
10	3	18	26	10			33			3.47	4.20	LOCAL PMG 5.2	16
10	3	18	42	22	9.2N	115.2W	33					NEVADA	3
10	3	19	22	54	45.3N	150.1E	45		4.7			KURILE IS	19
10	3	22	54	37	44.3N	149.2E	45		4.3			KURILE IS	19
10	3	23	24	35	32.2N	131.6E	33	6.2		6.13	5.24	KYUSHU JAPAN	20
10	4		27	58	32.8N	131.4E	29		4.9	5.23	5.10	KYUSHU JAPAN	19
10	4	2	47	32	20.7S	174.0W	33		5.3	5.56	5.20	TONGA IS	12
10	4	3	44	28	58.4S	25.0W	33		5.2	5.68	5.35	SANDWICH IS	10
10	4	7	14	53	49.0N	131.9W	33		4.4	3.97	4.66	VANCOUVER IS	2
10	4	8	34	53	16.1N	96.8W	41		4.5	5.09	4.56	OAXACA MEXICO COAST	5
10	4	13	29	45	18.1N	60.1E	33		5.3	5.06	5.12	ARABIAN SEA	33
10	4	14	2	12			33			3.27	4.60	LOCAL MAN 1.3	22
10	4	14	4	57	52.0N	169.7E	33		4.3			NEAR IS	1
10	4	17	1	21	34.9N	23.1E	33			3.65	4.53	W OF CRETE	30
10	4	17	49	12	30.2N	114.3W	14		4.8	3.48	4.70	GULF OF CALIFORNIA	3
10	4	17	58	19	30.6N	113.9W	14		4.1	2.44	3.75	GULF OF CALIF	4
10	4	21	15	25	30.0N	114.3W	14		4.3	2.80	4.30	GULF OF CALIF	4
10	4	21	19	12	30.1N	114.3W	14		5.0	3.65	4.80	GULF OF CALIFORNIA	3
10	5		14	52	15.7S	173.3W	33		4.6	4.33	4.60	TONGA IS	12
10	5	1	55	35	16.0S	173.2W	79		5.5	6.17	5.41	TONGA IS	12
10	5	4	22	26	43.9N	144.4E	33		4.9	5.00	4.70	HOKKAIDO	19
10	5	4	22	54	43.7N	127.1W	16		4.2	3.59	4.50	OREGON COAST	3
10	5	4	39	59	34.7N	22.9E	33		4.5	4.04	4.55	W OF CRETE	30
10	5	5	15	32	15.9S	173.2W	33		4.9	5.36	4.84	TONGA IS	12
10	5	6	16	26	11.7N	85.1W	159		3.8	3.06	4.40	NICARAGUA	6
10	5	6	18	38	15.6S	173.1W	33		4.5	4.78	4.20	TONGA IS	12
10	5	6	41	7	2.7N	127.4E	175		4.7	4.18	4.36	MOLUCCA SEA	23
10	5	7	32	19	28.8N	139.2E	454		4.6	4.93	4.68	S OF HONSHU JAPAN	18
10	5	9	25	18			33			3.72	4.70	LOCAL ATU 4.0	30
10	5	11	55	57	47.4N	128.6W	33		4.3	5.40	5.80	WASHINGTON COAST	3
10	5	12	49	20	15.7S	173.6W	33		4.2			TONGA IS	12
10	5	14	57	47	11.6N	42.8E	33	5.5	5.3	5.75	5.03	FRENCH SOMALILAND	37
10	5	16	54	58	16.7S	28.6E	33		4.9	4.49	4.67	S RHODESIA	37
10	5	17	18	25	11.7N	42.6E	33			4.47	4.65	FRENCH SOMOLILAND	37
10	5	18	40	46	52.0N	131.7W	57		3.9	3.40	3.40	QUEEN CHAROLETTE IS	2
10	5	20	20	3	52.1N	178.1E	140		4.9	5.30	4.73	RAT IS	1
10	5	21	9	39			33			3.71	4.30	LOCAL HKC 1.7	25
10	5	23	50	46	45.3N	150.0E	50		4.3	5.71	5.20	KURILE IS	19
10	6	8	48	12	21.9N	127.4W	33		4.0	4.08	3.80	SW OF GUADALUPE IS	39
10	6	12	10	48	9.0S	75.0W	82		4.1			CENTRAL PERU	8
10	6	15	1	42	22.0S	69.4W	33		4.6	4.61	4.53	N CHILE	8
10	6	17	15	34	32.9S	70.0W	101		5.1	5.76	5.18	CHILE-ARGENTINA	9
10	6	20	45	42	15.4S	69.9W	230		3.7			S PERU	8
10	6	22	8	39	53.8N	164.6W	33		4.0			FOX IS	1
10	7	3	59	54	11.6N	86.9W	50		4.5	4.66	4.40	W NICARAGUA COAST	5
10	7	5	25	17	19.8N	109.1W	33		4.7	3.99	3.92	REVILLA GIGEDO IS	5
10	7	11	16	6	12.1S	65.4E	33			4.58	4.56	NE OF MASCARENE IS	33
10	7	12	43	54	12.9S	76.8W	69		5.4	5.35	5.01	PERU	8
10	7	12	46	13			33			3.42	4.40	LOCAL PMG 5.1	16
10	7	13	14	25	23.6S	179.9E	550		5.7	6.25	5.50	FIJI IS	12
10	7	21	30	30	44.8N	114.4W	33		3.5			IDAHO	34
10	7	21	38	54	1.0S	147.5E	68		5.0	4.63	4.93	ADMIRALTY IS	16

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REL
10	7	23	34	27	42.7N	110.5E	33	5.5	4.9	4.87	4.80	INNER-OUTER MONGOLIA	27
10	8		17	1	15.1S	173.2W	33	5.9	5.7	6.08	5.21	SAMOA IS	12
10	8	1	4	35	3.1S	128.8E	33		4.2	4.52	4.20	CERAM	23
10	8	2	2	53	21.2S	177.9W	380		4.4	4.76	4.65	FIJI IS	12
10	8	2	51	6	28.6N	95.1E	24		5.4	4.76	4.86	ASSAM INDIA	26
10	8	2	59	56	19.5N	65.6W	33		4.0	4.08	5.10	N PUERTO RICO COAST	7
10	8	3	10	33	3.4S	150.8E	33		5.1	3.90	4.60	BISMARCK SEA	15
10	8	5	40	29	39.0N	20.4E	33		4.3	3.59	4.30	E GREECE COAST	30
10	8	6	25	8	6.6S	71.6W	557		3.7			W BRAZIL	8
10	8	6	26	18	11.3N	125.9E	39		5.4	5.20	5.00	SAMAR PI	22
10	8	8	17	47	22.7S	113.0W	33		4.2			EASTER IS	43
10	8	9	46	4			33			3.27	4.60	LOCAL MAN 1.3	22
10	8	10	28	57	29.0S	70.3W	71		4.2	4.52	4.10	CENTRAL CHILE	8
10	8	10	29	4	28.7S	69.8W	139		4.0			CENTRAL CHILE	8
10	8	10	53	12	75.5N	86.5E	25		4.7	4.58	4.55	KARA SEA	40
10	8	13	12	16	45.5S	35.3E	33			4.79	4.52	PRINCE EDWARD IS	33
10	8	20	29	40	2.6N	128.4E	166			4.05	4.27	HALMAHERA	23
10	8	21	37	6			33			3.87	4.90	LOCAL PMG 3.7	16
10	8	23	1	16	19.4S	175.8W	182		4.6	4.56	4.42	TONGA IS	12
10	9	2	3	28			33			4.17	4.80	LOCAL PMG 7.9	16
10	9	3	21	11	53.8N	170.5W	250		4.3	4.07	3.80	BERING SEA	1
10	9	4	36	44	39.4N	42.8E	35		4.6	4.05	4.43	E TURKEY	30
10	9	5	13	27	18.6S	173.7W	33		4.6	5.96	5.17	TONGA IS	12
10	9	7	36	48	14.5S	173.2W	33		4.0			TONGA IS	12
10	9	7	40	57	14.3S	172.6W	33		4.2			TONGA IS	12
10	9	10	36	53	20.3S	174.4W	33		4.9	5.37	5.14	TONGA IS	12
10	9	14	36	32	27.7N	138.5E	556		4.2	4.53	5.30	S OF HONSHU	18
10	9	16	24	14	.2N	18.4W	33		4.6	4.86	4.96	NW ASCENSION IS	32
10	9	21	20	30	44.0N	147.5E	33		4.3	3.48	4.10	KURILE IS	19
10	9	21	41	40	46.3N	12.3E						FRANCE	31
10	9	22	51	7			33			4.37	5.10	LOCAL SHI 8.6	29
10	9	23	40	56	8.4S	126.1E	229			4.19	4.20	TIMOR	24
10	10		50	35	5.6S	145.6E	102		4.7	4.88	4.92	NEW BRITAIN	16
10	10	3	15	15	47.6N	127.1W	33		3.9	2.04	3.80	WASHINGTON COAST	3
10	10	10	15	17	46.0N	153.7E	45		4.4	5.45	5.00	KURILE IS	19
10	10	12	4	47	20.2S	175.2W	25		4.5	3.90	4.60	TONGA IS	12
10	10	14	16	30	12.6S	167.0E	223		4.9	5.10	4.82	SANTA CRUZ IS	39
10	10	14	59	52	39.8N	78.2W	15		3.6			S PENNSYLVANIA	34
10	10	16	40	52	12.4N	144.0E	35		4.6	4.62	4.95	MARIANA IS	18
10	10	18	15	13	52.5N	176.3W	33		4.5			ANDREANOF IS	1
10	10	19		36			33			3.28	4.60	LOCAL MAN 1.7	22
10	11		1	13	24.1S	179.6W	437		4.9	5.68	5.20	FIJI IS	12
10	11	9	9	11	18.5S	179.9W	247		5.1	4.53	4.85	FIJI IS	13
10	11	9	51	16	18.0N	105.6W	33		4.6	4.07	4.07	JALISCO MEXICO COAST	5
10	11	9	59	42	20.0N	29.2W	33		4.5	5.52	4.60	N ATLANTIC OCEAN	32
10	11	10	17	8	17.8N	105.9W	33		5.0	5.23	4.52	JALISCO MEXICO COAST	5
10	11	11	13	11	46.0N	151.9E	30		4.3	4.54	4.80	KURILE IS	19
10	11	12	13	49	35.0N	135.2E	379		3.9	3.51	3.80	S HONSHU JAPAN	19
10	11	16	34		18.5S	177.7W	583		4.4	5.04	4.78	FIJI IS	13
10	11	20	48	25			33			3.27	4.00	LOCAL PMG 4.8	16
10	11	23	9	53	43.4N	111.1W	33		4.3			IDAHO	34
10	12		38	12	18.6S	179.8E	347		4.3	4.60	4.35	FIJI IS	13
10	12	2	46	48	71.6N	73.0W	33		4.1			BAFFIN IS	42
10	12	3	37	9	10.2S	161.2E	65		4.7	4.29	4.20	SOLOMON IS	15
10	12	6	58	27	43.4N	111.1W	33		3.9			IDAHO	34
10	12	9	29	44			33			3.88	4.50	LOCAL CHG 8.5	25
10	12	10	25	37	52.3N	179.8W	33		4.1			ANDREANOF IS	1
10	12	10	53	27	4.2S	105.2W	33		4.1			GALAPAGOS	44
10	12	11	26	58	44.8N	149.0E	40	6.9		6.78	5.69	KURILE IS	19
10	12	11	41	48	48.3N	149.2E	40		4.5	4.55	4.80	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	12	11	53	5	46.0N	148.8E	33					KURILE IS	19
10	12	12	2	19	44.4N	149.6E	40		4.5	4.88	4.90	KURILE IS	19
10	12	12	15	20	17.0S	69.5W	170		3.8	3.55	4.45	PERU-BOLIVIA	8
10	12	12	32	36	44.7N	149.6E	40		4.6	4.68	4.50	KURILE IS	19
10	12	13	7	8	44.5N	149.4E	50		4.8	5.55	5.22	KURILE IS	19
10	12	13	24	1	48.8N	149.4E	45		4.0			KURILE IS	19
10	12	13	29	36	44.5N	149.3E	50		4.5			KURILE IS	19
10	12	13	54	58	43.5N	151.1E	40		4.3	4.96	4.85	KURILE IS	19
10	12	14	15	8	44.7N	149.5E	45		4.6	4.45	4.70	KURILE IS	19
10	12	14	33	36	30.4N	41.8W	33		4.4	4.10	4.10	N ATLANTIC OCEAN	32
10	12	16	11	55	44.4N	149.7E	60		4.4	5.03	4.90	KURILE IS	19
10	12	16	28	10	44.8N	149.4E	50		4.3	4.96	4.85	KURILE IS	19
10	12	18	5	48	44.5N	149.7E	45		4.2	4.12	4.30	KURILE IS	19
10	12	18	48	36	44.7N	149.4E	50		5.0	4.74	4.60	KURILE IS	19
10	12	19	10	21	45.1N	129.9W	33		4.2			OREGON COAST	3
10	12	19	46	53	44.3N	149.4E	45		4.4	4.47	4.55	KURILE IS	19
10	12	19	57		44.6N	149.4E	50		4.4	4.89	4.80	KURILE IS	19
10	12	20	21	4	44.4N	149.2E	45		4.7	4.97	4.85	KURILE IS	19
10	12	20	43	30			33			4.13	4.90	LOCAL MAN 2.0	22
10	12	21	17	38	17.9N	145.2E	638		4.0	3.37	4.00	MARIANA IS REGION	18
10	12	21	50	2	43.1N	111.2W	33		3.9			IDAHO	34
10	12	22	2	1	44.5N	149.5E	45		4.4	5.56	5.10	KURILE IS	19
10	12	22	7	29	44.4N	149.2E	40		4.2	4.44	4.30	KURILE IS	19
10	12	22	34	2	43.1N	111.3W	33		3.9			IDAHO	34
10	12	23	2	41	50.8N	149.0E	33		4.4			OKHOTSK SEA	41
10	12	23	40	11	44.3N	149.2E	40		4.3	4.51	4.60	KURILE IS	19
10	13	1	26	34	44.4N	149.3E	33		4.4	5.74	5.00	KURILE IS	19
10	13	1	34	54	44.4N	149.2E	33		4.3	5.25	4.90	KURILE IS	19
10	13	2	12	20	44.0N	149.4E	45		3.8	4.02	4.40	KURILE IS	19
10	13	4	5	50	44.4N	149.2E	30		4.4			KURILE IS	19
10	13	5	10	12	9.8N	84.1W	63		4.4	4.47	4.60	COSTA RICA	6
10	13	5	17	57	44.8N	149.5E	60	8.0		6.98	5.50	KURILE IS	19
10	13	5	30	5	44.8N	151.2E	40			6.57	5.40	KURILE IS	19
10	13	5	36	36				6.2				KURILE IS	19
10	13	5	42	14	46.5N	151.6E	55		5.5	6.63	5.90	KURILE IS	19
10	13	6	5	30	45.9N	151.9E	55		5.5			KURILE IS	19
10	13	6	9	2	45.3N	151.3E	60		5.6	7.10	6.20	KURILE IS	19
10	13	6	12	22	45.1N	149.7E	40		5.0			KURILE IS	19
10	13	6	23	38	45.4N	150.8E	40		5.2			KURILE IS	19
10	13	6	46	54	45.3N	147.5E	55		5.3	5.61	5.30	KURILE IS	19
10	13	6	48	26	45.5N	151.8E	55		5.2			KURILE IS	19
10	13	7	3	24	45.5N	150.6E	50		5.6	6.04	5.37	KURILE IS	19
10	13	7	9	3								KURILE IS	19
10	13	7	16	43	45.5N	151.5E	55		4.9	5.47	4.70	KURILE IS	19
10	13	7	16	56								KURILE IS	19
10	13	7	19	11	45.0N	151.5E	40		4.8			KURILE IS	19
10	13	7	28	28								KURILE IS	19
10	13	7	31	51	45.0N	151.4E	40		4.9			KURILE IS	19
10	13	7	35	45	45.5N	151.8E	45		4.6			KURILE IS	19
10	13	7	36	43								KURILE IS	19
10	13	7	46	23								KURILE IS	19
10	13	7	48	23	45.7N	149.6E	30		4.7			KURILE IS	19
10	13	7	55	55								KURILE IS	19
10	13	8	2	5								KURILE IS	19
10	13	8	6	36	45.3N	151.7E	40		4.8	5.40	4.40	KURILE IS	19
10	13	8	7	19								KURILE IS	19
10	13	8	8	46								KURILE IS	19
10	13	8	9	42								KURILE IS	19
10	13	8	11	32	44.5N	151.6E	60		4.8	4.95	4.85	KURILE IS	19
10	13	8	11	49								KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	13	8	19	16	45.3N	151.7E	40		4.5			KURILE IS	19
10	13	8	30	40								KURILE IS	19
10	13	8	34	40	44.5N	150.9E	33		4.5			KURILE IS	19
10	13	8	37	11	45.2N	149.9E	50		4.5			KURILE IS	19
10	13	8	39	24								KURILE IS	19
10	13	8	39	47	45.6N	148.0E	40		4.5			KURILE IS	19
10	13	8	47	36								KURILE IS	19
10	13	8	50	20	45.3N	151.2E	40		4.6	5.79	5.00	KURILE IS	19
10	13	9	10	15	44.2N	149.5E	40		4.4			KURILE IS	19
10	13	9	11	54	43.8N	150.8E	30	5.8	5.0	4.71	4.70	KURILE IS	19
10	13	9	15	26	44.6N	149.6E	50		4.9	5.16	4.86	KURILE IS	19
10	13	9	17	40								KURILE IS	19
10	13	9	22	45	44.9N	151.0E	50		5.0	4.62	4.60	KURILE IS	19
10	13	9	27	24	45.2N	151.8E	40		4.6			KURILE IS	19
10	13	9	44	52	44.1N	150.0E	45		4.5	5.37	4.85	KURILE IS	19
10	13	9	45	05								KURILE IS	19
10	13	9	51	5								KURILE IS	19
10	13	9	51	50	42.0N	149.5E	45		4.5			KURILE IS	19
10	13	9	55	43	45.5N	151.8E	40		4.7			KURILE IS	19
10	13	10	1	13	44.3N	151.0E	55		4.3			KURILE IS	19
10	13	10	5	24	44.2N	150.2E	45	5.7	4.5			KURILE IS	19
10	13	10	15	28	44.5N	149.6E	45		4.7	5.62	5.30	KURILE IS	19
10	13	10	33	57	44.4N	150.3E	45		4.7			KURILE IS	19
10	13	10	36	45	45.3N	150.4E	45		4.4			KURILE IS	19
10	13	10	47	14	45.4N	151.8E	40		4.9			KURILE IS	19
10	13	11	15	40	44.9N	151.1E	45		4.9	4.93	4.60	KURILE IS	19
10	13	11	29	59	44.9N	150.7E	55		4.8	4.19	4.10	KURILE IS	19
10	13	11	35	18	45.4N	151.6E	25		4.8			KURILE IS	19
10	13	11	39	57	44.3N	149.3E	25		4.3			KURILE IS	19
10	13	11	57	20	44.7N	151.3E	50		4.3			KURILE IS	19
10	13	12	5	48	45.0N	150.8E	25		4.6			KURILE IS	19
10	13	12	20	47	44.8N	149.6E	45		4.3			KURILE IS	19
10	13	12	29	39	45.9N	151.8E	30		5.0	5.75	5.40	KURILE IS	19
10	13	12	34	19	44.6N	149.3E	25		4.5			KURILE IS	19
10	13	12	40	44	45.6N	150.5E	45		4.6	5.25	5.00	KURILE IS	19
10	13	12	42	13	44.4N	149.4E	55	5.9	5.2	5.50	5.08	KURILE IS	19
10	13	12	52	25	44.6N	150.5E	30		4.6			KURILE IS	19
10	13	12	53	57	44.6N	149.3E	25		4.6			KURILE IS	19
10	13	12	58	22	45.0N	150.1E	50	6.0	5.4	5.92	5.37	KURILE IS	19
10	13	13	5	4	46.3N	151.3E	33		4.8			KURILE IS	19
10	13	13	21		44.5N	149.3E	60		4.5	3.96	4.00	KURILE IS	19
10	13	13	36	53	44.9N	150.4E	50		4.4			KURILE IS	19
10	13	13	41	45	44.5N	149.8E	50		4.3			KURILE IS	19
10	13	13	43	25	44.4N	151.2E	50		4.6			KURILE IS	19
10	13	13	53	8	44.3N	149.9E	40		4.2			KURILE IS	19
10	13	13	54	25	44.9N	151.7E	50		4.8	4.63	4.60	KURILE IS	19
10	13	14	3	56	45.3N	151.0E	25		4.8			KURILE IS	19
10	13	14	14	43	45.0N	150.2E	40		4.7			KURILE IS	19
10	13	14	26	12	44.5N	149.5E	50		5.1	5.47	5.10	KURILE IS	19
10	13	14	50	20	17.6N	100.8W	88		4.0			MEXICO COAST	5
10	13	15	27	18	48.5N	144.9E	45		4.4			KURILE IS	19
10	13	15	33	54	46.1N	151.7E	55		4.3			KURILE IS	19
10	13	15	50	9	47.0N	149.5E	45		4.1			KURILE IS	19
10	13	15	59	53	45.6N	150.5E	35	6.3	6.1	6.67	5.88	KURILE IS	19
10	13	16	12	33	45.1N	150.8E	30		4.8	5.29	5.10	KURILE IS	19
10	13	16	17	42	45.5N	149.4E	40		4.6			KURILE IS	19
10	13	16	28	58	44.9N	150.3E	40		5.2	5.52	5.20	KURILE IS	19
10	13	16	32	39	45.1N	151.3E	40		4.5			KURILE IS	19
10	13	16	45	19	18.4N	103.1W	50		4.8	4.15	4.20	MICHOACAN MEXICO COAST	5
10	13	16	49	41	44.5N	150.4E	40		4.5			KURILE IS	19



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	13	17	17	19	44.4N	151.6E	60		4.7			KURILE IS	19
10	13	17	25	55	44.5N	150.8E	45		4.6	4.45	4.25	KURILE IS	19
10	13	17	31	19	44.3N	149.2E	45		4.7	5.00	4.90	KURILE IS	19
10	13	17	55	48	43.2N	111.3W	33		3.7			IDAHO	34
10	13	17	56	27	44.5N	150.2E	45		4.2			KURILE IS	19
10	13	18	10	55	44.0N	150.0E	45		4.7	4.25	3.90	KURILE IS	19
10	13	18	13	45	44.2N	149.4E	55		4.7	4.91	4.55	KURILE IS	19
10	13	18	14	58	45.2N	150.8E	45		5.2	6.05	5.55	KURILE IS	19
10	13	18	34	48	47.8N	148.1E	33		4.5			KURILE IS	19
10	13	18	36	42	44.9N	150.2E	50		4.2			KURILE IS	19
10	13	19	11	21	44.2N	149.7E	25		4.6			KURILE IS	19
10	13	19	26	4	45.7N	151.5E	30		4.6	5.08	4.70	KURILE IS	19
10	13	19	27	38	45.7N	151.7E	45	5.8	5.5	5.87	5.28	KURILE IS	19
10	13	19	41	21	45.3N	151.4E	45	5.9	4.9			KURILE IS	19
10	13	19	52	17	45.0N	151.0E	25		4.4			KURILE IS	19
10	13	19	54	56	44.5N	150.9E	35		4.2			KURILE IS	19
10	13	20	14	8	44.4N	151.4E	25		4.5			KURILE IS	19
10	13	20	27	38	45.6N	151.7E	30		4.8	4.90	4.30	KURILE IS	19
10	13	20	35	53	46.1N	151.8E	30		4.5			KURILE IS	19
10	13	21	17	45	45.4N	151.5E	45		4.4			KURILE IS	19
10	13	21	35	37	45.3N	151.7E	45		4.7			KURILE IS	19
10	13	21	48	2	44.3N	149.5E	50		4.3			KURILE IS	19
10	13	21	50	2	46.1N	151.8E	45		4.5	4.91	4.30	KURILE IS	19
10	13	21	55	1	44.7N	152.1E	50		5.5	5.79	5.25	KURILE IS	19
10	13	22	2	59	45.0N	150.9E	50		5.0	5.59	5.23	KURILE IS	19
10	13	22	25	37	44.2N	149.3E	45		4.4			KURILE IS	19
10	13	22	29	49	44.3N	149.5E	40		4.8			KURILE IS	19
10	13	23	5	34	45.5N	151.8E	30		4.6			KURILE IS	19
10	13	23	8	49	45.2N	151.4E	45		4.6			KURILE IS	19
10	13	23	15	37								KURILE IS	19
10	13	23	25	1	44.4N	153.0E	50		4.7	4.62	4.10	KURILE IS	19
10	13	23	52	23	44.5N	150.1E	50	6.1	5.5	5.61	5.20	KURILE IS	19
10	14	00	3	4	45.0N	150.9E	60		4.7			KURILE IS	19
10	14		4	48	46.1N	151.4E	60		4.6			KURILE IS	19
10	14	00	19	18	44.5N	150.5E	45		4.4			KURILE IS	19
10	14		52	4	46.6N	150.6E	35		4.5	5.30	4.50	KURILE IS	19
10	14	1	9	23	44.8N	151.7E	40		4.1			KURILE IS	19
10	14	1	19	17	44.3N	151.2E	55		4.4			KURILE IS	19
10	14	1	35	51	44.4N	149.8E	50		4.2			KURILE IS	19
10	14	1	50	47	44.5N	151.4E	50		4.4			KURILE IS	19
10	14	2	1	24	25.2N	95.3E	33		5.3	5.73	5.05	E INDIA	26
10	14	2	15	15	47.5N	150.0E	45		4.4			KURILE IS	19
10	14	2	18	39	44.4N	150.3E	45		4.4			KURILE IS	19
10	14	3	21	56	44.9N	151.8E	50		4.2	5.36	5.00	KURILE IS	19
10	14	3	31	8	45.9N	151.8E	25		5.0	5.65	5.45	KURILE IS	19
10	14	3	52	56	44.7N	149.8E	50		4.1			KURILE IS	19
10	14	4	6	2	44.9N	150.2E	50		5.3	5.60	5.08	KURILE IS	19
10	14	4	11	14	44.7N	150.6E	45	6.1	5.3	5.58	5.16	KURILE IS	19
10	14	4	13	3	44.9N	150.7E	40	5.5	5.2	5.73	5.40	KURILE IS	19
10	14	4	34	31	44.4N	151.5E	25		4.5	4.56	4.80	KURILE IS	19
10	14	5	24	12	44.5N	151.0E	55		4.9	5.32	4.78	KURILE IS	19
10	14	5	39	17	2.3S	77.6W	33		4.7	5.19	4.62	PERU-EQUADOR	8
10	14	5	42	55	44.8N	150.6E	50		4.5	4.47	4.70	KURILE IS	19
10	14	6	26	12	52.8N	167.1W	80		5.1	5.47	4.94	FOX IS ALEUTIAN IS	1
10	14	6	29	2	44.1N	149.4E	35		4.4	5.29	5.00	KURILE IS	19
10	14	6	59	57	18.8S	169.3E	250		4.7	4.69	4.50	NEW HEBRIDES IS	14
10	14	7	15	58	44.6N	150.3E	45		4.9	5.18	4.80	KURILE IS	19
10	14	7	53	43	45.3N	151.0E	35		4.1			KURILE IS	19
10	14	7	54	34	44.8N	151.2E	55		5.1	5.21	4.88	KURILE IS	19
10	14	8	31	23	42.2N	108.3W	33		4.5			WYOMING	34

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	14	8	43	57	44.7N	150.7E	50		4.3			KURILE IS	19
10	14	9	22	7	19.0S	169.0W	160			4.50	4.40	NEW HEBRIDES IS	14
10	14	9	29	7	45.5N	151.7E	40		4.6	4.54	4.75	KURILE IS	19
10	14	10	1	27	45.1N	150.8E	45		4.2			KURILE IS	19
10	14	10	24	37	45.7N	150.2E	40		4.3	5.30	4.90	KURILE IS	19
10	14	11	13	19	45.0N	150.9E	45		4.4	5.04	5.10	KURILE IS	19
10	14	11	23	14	45.5N	151.7E	50		4.3	5.09	4.80	KURILE IS	19
10	14	11	56	31	45.4N	150.9E	45		4.4			KURILE IS	19
10	14	12	11	42	45.6N	152.4E	40		4.5	4.82	4.60	KURILE IS	19
10	14	12	44	54	44.7N	150.2E	50		4.3	4.87	4.80	KURILE IS	19
10	14	13	21	45	44.8N	151.0E	60	6.1	5.9	6.48	5.68	KURILE IS	19
10	14	13	53	17	45.0N	151.1E	30		4.8	6.05	5.70	KURILE IS	19
10	14	14	47	31	3.3S	126.7E	33		4.7	4.85	4.74	CERAM IS	23
10	14	15	31	39	1.6N	127.6E	231			4.57	4.60	TIMUR REGION	23
10	14	17	50	15	45.2N	151.3E	60	6.3	5.0	5.34	4.99	KURILE IS	19
10	14	17	56	18	45.0N	151.3E	30		4.5	4.86	5.00	KURILE IS	19
10	14	18	7	56	44.8N	152.2E	40		4.4			KURILE IS	19
10	14	18	32	7	4.2S	103.4E	33			5.05	4.93	SUMATRA	24
10	14	20	46	17	44.8N	152.3E	40		4.6			KURILE IS	19
10	14	21	8		45.0N	150.5E	45		5.1	5.29	4.76	KURILE IS	19
10	14	21	19	55	44.3N	149.3E	45		4.7	4.43	4.10	KURILE IS	19
10	14	21	43	47	44.5N	149.2E	60		4.1	3.92	4.40	KURILE IS	19
10	14	22	6	14	44.0N	149.3E	33		4.1	3.47	4.10	KURILE IS	19
10	14	22	8	27	17.0S	173.9E	33		4.5	4.45	4.60	FIJI IS	13
10	14	22	35	32	44.5N	150.6E	45		5.0	5.09	4.77	KURILE IS	19
10	14	22	59	5	17.0S	173.8E	33		4.6	4.96	4.53	FIJI IS REGION	13
10	14	23	5	16	39.5N	74.4E	69			2.95	3.40	SINKIANG CHINA	27
10	15		38	53	45.0N	151.8E	45		4.3			KURILE IS	19
10	15		42	52	45.1N	150.9E	45		4.2			KURILE IS	19
10	15		47	41	43.2N	150.2E	40		4.2	4.68	4.80	KURILE IS	19
10	15	4	13	22	2.6N	98.9E	137			4.60	4.35	SUMATRA	24
10	15	4	33	44	48.9N	151.7E	33		4.2			KURILE IS	19
10	15	4	56	27	44.5N	149.6E	50		4.5	5.80	5.40	KURILE IS	19
10	15	5	10	34	44.3N	151.4E	45		4.2			KURILE IS	19
10	15	6	49	38	42.2N	152.3E	40		4.2			KURILE IS	19
10	15	7	7		20.5S	173.9W	33		5.1	5.38	5.08	TONGA IS	12
10	15	7	26	9	59.0N	139.8W	33		4.3			ALASKA	2
10	15	8	12		45.0N	151.1E	40		4.9	5.23	4.75	KURILE IS	19
10	15	9	2	8	45.3N	150.2E	40	5.5	5.4	5.66	5.07	KURILE IS	19
10	15	9	14	34	44.3N	149.5E	33		4.3			KURILE IS	19
10	15	9	37	9	45.2N	150.2E	40		5.5	5.57	5.05	KURILE IS	19
10	15	9	59	30	67.2N	18.4W	33	5.5	5.2	5.43	4.94	N OF ICELAND	40
10	15	10	47	13	44.6N	149.0E	50		5.4	5.90	5.23	KURILE IS	19
10	15	11	53	46	45.1N	151.9E	55		4.8	5.16	4.65	KURILE IS	19
10	15	12	3	49	45.1N	151.8E	45		4.7	5.30	4.95	KURILE IS	19
10	15	12	28	58	46.6N	77.6W	14					SW QUEBEC	34
10	15	12	56	19	17.1S	173.9E	33		4.5	4.89	4.37	FIJI IS	13
10	15	12	59	50	46.3N	77.8W	14		3.8			SW QUEBEC	34
10	15	15	15	14	44.3N	114.7W	33		3.9			IDAHO	34
10	15	16	16	6	45.6N	150.2E	33		4.6			KURILE IS	19
10	15	17	15	56	44.0N	149.3E	50		4.4	4.85	4.70	KURILE IS	19
10	15	17	35	1	44.8N	150.4E	40		4.2	4.07	4.50	KURILE IS	19
10	15	17	54	4	45.2N	151.3E	29		4.6	4.90	4.80	KURILE IS	19
10	15	18	23	58	45.3N	151.0E	33		4.9	5.25	4.88	KURILE IS	19
10	15	19	55	10	28.2S	67.3W	56		4.3			ARGENTINA	8
10	15	20	41	30	45.4N	151.1E	50		4.9	5.45	5.05	KURILE IS	19
10	15	21	44	58	3.0S	129.9E	27		5.2	5.72	5.07	CERAM	23
10	15	22	41	45	46.8N	152.4E	35		4.6	4.78	4.60	KURILE IS	19
10	15	23	9		45.9N	149.9E	40		4.6	4.79	4.90	KURILE IS	19
10	16		46		45.1N	153.7E	45		4.3	4.44	4.63	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	16	1	25	7	46.1N	151.8E	45		4.9			KURILE IS	19
10	16	3	15	1								KURILE IS	19
10	16	4	36	1	44.0N	150.9E	40		4.5			KURILE IS	19
10	16	5	15	36	44.8N	150.4E	33		5.2	5.28	4.73	KURILE IS	19
10	16	7	12	58	22.2S	179.5W	539		4.3	4.40	4.83	FIJI IS	12
10	16	7	50	22	10.8S	163.7E	68		4.5	5.05	4.90	SOLOMON IS REGION	15
10	16	8	33	42	45.6N	151.9E	45		5.0			KURILE IS	19
10	16	9	29	57	45.2N	153.8E	40		4.6			KURILE IS	19
10	16	10	30	55	45.2N	150.4E	45		5.0	5.03	4.65	KURILE IS	19
10	16	12	47	44	1.8S	127.9E	33		5.2	5.83	5.30	HALMAHERA	23
10	16	13	55	26	15.1S	173.6W	33		4.9	5.21	4.80	TONGA IS	12
10	16	14	20	45	45.8N	151.8E	40		4.5			KURILE IS	19
10	16	14	59	44	46.6N	150.4E	40		4.3			KURILE IS	19
10	16	15	31	1	42.4N	70.7W	25	4.2	4.2	3.05	3.80	MASS COAST	34
10	16	15	36	33	44.2N	114.8W	33		4.2			IDAHO	34
10	16	15	43	1	38.6N	73.4E	33	6.0	5.9	6.09	5.20	TADZHIK SSR	48
10	16	19	2	25	28.8N	58.0E	32		4.8	5.02	5.10	S IRAN	29
10	16	20	31	15	38.6N	73.1E	70					TADZHIK SSR	48
10	16	20	39	30	8.8N	137.9E	28		5.0	5.00	4.90	PALAU IS REGION	17
10	16	21	30	53	44.4N	150.9E	80		5.0	4.75	4.20	KURILE IS	19
10	16	22	21	16	17.7N	62.0W	67		4.9	5.39	4.60	LEEWARD IS	7
10	17		35	20	45.1N	149.6E	33		4.9	4.73	4.20	KURILE IS	19
10	17	1	22	8	44.5N	114.7W	33		4.7	2.90	3.60	IDAHO	34
10	17	2	11	35	21.5S	63.4W	33		4.5	4.94	5.60	S BOLIVIA	8
10	17	3	5	50	11.6N	140.6E	70		5.1	4.97	4.58	MARIANA IS	17
10	17	3	45	8	45.1N	151.4E	45		4.3	5.64	4.50	KURILE IS	19
10	17	4	19	50	45.2N	151.7E	50		4.5	5.21	4.60	KURILE IS	19
10	17	4	10	55	44.3N	149.1E	45		4.7	5.80	4.80	KURILE IS	19
10	17	8	31	19	45.8N	151.7E	45		4.6	4.91	4.80	KURILE IS	19
10	17	9	23	24	38.8N	73.4E	40		4.4	4.30	4.30	TADZHIK SSR	48
10	17	10	16	49	43.8N	151.0E	50		4.5	5.16	4.50	KURILE IS	19
10	17	10	41	26	45.0N	150.8E	33		4.3	4.10	4.50	KURILE IS	19
10	17	11	35	31	17.3S	168.0E	33		4.3	4.84	4.73	NEW HEBRIDES IS	14
10	17	11	50	50	45.0N	151.4E	45		4.2	4.23	4.57	KURILE IS	19
10	17	12	18	23	49.2N	149.8E	45		4.2	5.14	4.80	KURILE IS	19
10	17	12	58	34	45.1N	150.3E	50		4.2	5.47	5.00	KURILE IS	19
10	17	14	6	32	44.2N	149.2E	40		4.6	5.19	5.00	KURILE IS	19
10	17	14	14		9.8N	126.5E	33		5.4	5.66	5.28	E MINDANAO COAST	22
10	17	14	15	2			33			3.91	4.70	LOCAL	8
10	17	14	22	15	46.2N	152.0E	45		4.4	5.12	4.80	KURILE IS	19
10	17	15	3	13	44.1N	149.2E	55		4.6			KURILE IS	19
10	17	19	3	32	6.6N	126.3E	33		5.4	5.17	4.85	OFF MINDANAO COAST	22
10	17	22	35	40	45.3N	151.6E	30		4.4	4.99	4.40	KURILE IS	19
10	17	22	24	34	44.6N	149.0E	45	6.1	5.4	5.96	5.02	KURILE IS	19
10	17	22	54	57	44.5N	149.0E	45		4.9	5.37	5.00	KURILE IS	19
10	18	1	59	38	44.5N	149.1E	45		4.9	5.19	4.86	KURILE IS	19
10	18	2	28	41	44.5N	153.3E	50		4.2			KURILE IS	19
10	18	2	47	4	18.0S	178.7W	650		3.7	4.94	4.75	FIJI IS	13
10	18	4	1	22	44.5N	150.4E	60		4.8	4.54	4.35	KURILE IS	19
10	18	4	36	1	44.0N	150.9E	40		4.5	4.02	3.70	KURILE IS	19
10	18	5	16	10	42.8N	141.4E	40		4.6	5.81	5.50	N HOKKAIDO JAPAN COAST	19
10	18	5	26	16	45.3N	151.6E	40		4.2			KURILE IS	19
10	18	5	40	53	45.4N	151.5E	40		4.5			KURILE IS	19
10	18	6	20	22	44.7N	149.9E	60		4.3	5.45	5.00	KURILE IS	19
10	18	7	5	15	45.8N	150.8E	30		4.5	5.18	5.06	KURILE IS	19
10	18	7	55	14	44.8N	150.0E	55		4.3	4.35	4.00	KURILE IS	19
10	18	8	5	22	62.6N	146.6W	51		4.2	4.43	4.70	ALASKA	1
10	18	8	15	17	44.5N	151.1E	55		4.3	5.91	5.00	KURILE IS	19
10	18	8	41	38	10.5S	161.6E	33		4.9	5.19	4.98	SOLUMON IS	15
10	18	8	42	16			33			3.28	4.60	LOCAL ATU 4.9	30

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REF
10	18	8	53	34	44.8N	150.2E	60	5.2	5.0	5.30	4.83	KURILE IS	19
10	18	10	4	31	48.2N	151.4E	33		4.2	4.58	4.10	KURILE IS	19
10	18	10	18	18	44.9N	152.8E	55		4.3			KURILE IS	19
10	18	14	15	7			33			4.19	5.00	LOCAL ARL 6.7	8
10	18	16		34	34.0S	71.4W	60		4.0	6.00	5.60	CENTRAL CHILL	8
10	18	17	55		45.6N	150.6E	40		5.2	5.44	4.92	KURILE IS	19
10	18	18	45	57	43.7N	149.6E	45		4.2			KURILE IS	19
10	18	20	5	14	47.6N	154.3E	40		5.1	5.37	4.86	KURILE IS	19
10	18	20	19	12	31.1N	41.1W	33		4.5			N ATLANTIC	32
10	18	21	22	53	45.2N	151.1E	45		5.0	4.87	4.70	KURILE IS	19
10	18	21	36	55	5.3S	103.5E	33		5.1	4.84	4.63	SUMATRA	24
10	18	22	2	44						3.08	4.40	LOCAL PMG 4.5	16
10	18	22	52	51	46.1N	152.5E	40		4.4	5.40	5.00	KURILE IS	19
10	18	23	43	36	44.7N	149.2E	45		4.4			KURILE IS	19
10	19	1	4	54	15.9N	93.9W	34		4.3	4.55	4.50	NEAR CHIAPAS MEXICO	5
10	19	2	14	17	18.3S	71.2W	78		4.5	4.59	4.46	S PERU COAST	5
10	19	2	18	37	46.8N	153.7E	45	6.0	5.2	5.63	4.91	KURILE IS	19
10	19	3	2	8	44.5N	114.7W	33		3.9			IDAHO	34
10	19	3	2	43	46.7N	154.0E	33		3.9			KURILE IS	19
10	19	3	15	2	46.5N	153.9E	40		5.1	5.41	4.95	KURILE IS	19
10	19	3	34	20	46.6N	153.8E	33	5.7	5.4	5.71	4.96	KURILE IS	19
10	19	3	47	7	46.8N	153.8E	25		5.2	5.70	5.21	KURILE IS	19
10	19	4	7	35	46.8N	153.7E	40		4.5	4.56	4.70	KURILE IS	19
10	19	4	10	44	47.3N	153.6E	40		4.2	4.55	4.80	KURILE IS	19
10	19	4	26	17	44.4N	149.3E	50		4.5	3.98	4.40	KURILE IS	19
10	19	4	33	41			33			3.72	4.80	LOCAL LPO 5.8	8
10	19	4	59	31	21.2S	71.0W	33		4.6	3.32	4.56	OFF N CHILE COAST	8
10	19	5	41	18	44.6N	149.1E	40		4.2	4.55	4.80	KURILE IS	19
10	19	6	39	40	51.8N	171.8W	60		4.2			FOX IS	19
10	19	6	46	7	41.2N	71.3E	33		5.0	4.32	4.05	KIRGHIZ SSR	40
10	19	7		25	58.7N	137.4W	34		3.9			ALASKA	19
10	19	7	2	26	18.4S	168.9E	222		4.6	5.31	4.80	NEW HEBRIDES IS	19
10	19	7	56	20	44.1N	151.1E	45		4.5	4.02	4.40	KURILE IS	19
10	19	9	2	20	9.9N	126.1E	86			4.81	4.84	E LEYTE PI COAST	22
10	19	9	38	8	45.4N	149.2E	30		4.6			KURILE IS	19
10	19	11	19	32	52.4N	149.5W	95		4.3	4.62	4.10	CENTRAL ALASKA	1
10	19	11	52	55	10.1S	119.3E	33			4.48	4.36	SOMBA	44
10	19	14	51	24	34.0S	71.4W	60		4.2	4.98	4.90	CENTRAL CHILL	8
10	19	15	20	5	23.7S	70.0W	67		4.4	4.79	5.20	N CHILL	8
10	19	15	42	32	43.4N	152.0E	40		4.4	4.68	4.80	KURILE IS	19
10	19	16	15	21	44.4N	150.9E	120		5.1	5.39	4.40	KURILE IS	19
10	19	16	20	54	45.0N	149.4E	45		4.4			KURILE IS	19
10	19	18		46	35.9S	80.5E	33			5.43	4.98	INDIAN OCEAN	33
10	19	18	1	58	46.5N	152.7E	40		4.2	4.55	4.80	KURILE IS	19
10	19	19	10	15	45.2N	151.2E	45		4.3	5.92	4.80	KURILE IS	19
10	19	20	53	37	42.6N	152.0E	40		3.9	4.75	4.90	KURILE IS	19
10	19	21	22	25	15.3N	89.2W	33		3.9			GUATEMALA-HONDURAS	5
10	19	23	11	41	45.2N	151.1E	33		4.6	5.25	4.60	KURILE IS	19
10	19	23	44	31	45.1N	151.4E	40		4.4	4.07	4.50	KURILE IS	19
10	20		22	53	37.7S	73.2W	35		5.0	5.69	5.10	NEAR CHILL COAST	8
10	20		42	42	44.3N	149.7E	40		4.0			KURILE IS	19
10	20		53	7	44.7N	150.7E	25	7.1		6.17	5.20	KURILE IS	19
10	20		57	5			50	6.2				KURILE IS	19
10	20	1	5	12			40					KURILE IS	19
10	20	1	7	35	47.4N	151.1E	45	5.0				KURILE IS	19
10	20	1	14	5	44.6N	150.1E	45		4.8	5.04	4.85	KURILE IS	19
10	20	1	22	35	45.9N	153.6E	40		5.0	5.66	5.30	KURILE IS	19
10	20	1	31	37			50					KURILE IS	19
10	20	1	32	53								KURILE IS	19
10	20	1	40	40	43.9N	149.8E	40		4.2	4.53	4.75	KURILE IS	19
10	20	1	41	12								KURILE IS	19

MO	DA	HR	MN	SFC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	20	1	54	12	23.4S	68.4W	118		4.5	6.46	5.90	N CHILE	8
10	20	2	9	29	44.7N	150.0E	45		4.9	5.64	5.17	KURILE IS	19
10	20	2	12	43	45.0N	150.8E	50		4.8	4.49	4.65	KURILE IS	19
10	20	2	20	37	44.8N	150.0E	40		4.2	4.03	4.40	KURILE IS	19
10	20	2	21	45			40					KURILE IS	19
10	20	2	46	38			60					KURILE IS	19
10	20	2	52		46.5N	148.1E	40		3.8	4.03	4.40	KURILE IS	19
10	20	2	58	54	44.4N	149.6E	60		4.5	4.56	4.75	KURILE IS	19
10	20	3		11	20.8S	178.6W	600		4.8	5.37	4.90	FIJI IS REGION	12
10	20	3	13	23	44.1N	149.8E	40		4.3	3.44	4.10	KURILE IS	19
10	20	3	16	51	46.7N	152.0E	33		4.2	4.86	5.00	KURILE IS	19
10	20	3	34	28			50					KURILE IS	19
10	20	3	41	42	44.3N	149.4E	45		3.9			KURILE IS	19
10	20	3	55	29	44.8N	149.9E	55		4.2			KURILE IS	19
10	20	3	57	20			50					KURILE IS	19
10	20	3	59	15	45.3N	149.7E	55		4.6			KURILE IS	19
10	20	4	31	37	44.4N	149.9E	50		4.3			KURILE IS	19
10	20	4	40	9	44.9N	150.3E	50		4.6	4.40	4.60	KURILE IS	19
10	20	4	46	58	44.6N	149.8E	40		4.2	4.83	4.70	KURILE IS	19
10	20	4	52	29			50					KURILE IS	19
10	20	4	58	55	44.5N	149.7E	50		4.4	5.02	4.70	KURILE IS	19
10	20	5	20	18	44.9N	151.4E	50		4.8	4.81	4.55	KURILE IS	19
10	20	5	40	50	47.2N	153.7E	55		4.5	4.79	4.90	KURILE IS	19
10	20	5	52	29	44.6N	149.7E	40		4.0	4.40	4.70	KURILE IS	19
10	20	6	2	15	44.3N	149.2E	40		4.2			KURILE IS	19
10	20	6	12	25	43.9N	150.7E	50		5.2	5.79	5.24	KURILE IS	19
10	20	6	24	51	44.4N	150.3E	50		4.8	4.79	4.55	KURILE IS	19
10	20	6	56	44	44.4N	150.0E	40		4.1			KURILE IS	19
10	20	7	5	56	42.0N	148.5E	55		4.2			KURILE IS	19
10	20	7	20	20	44.7N	149.9E	40		4.3	4.58	4.75	KURILE IS	19
10	20	8	25	12	44.3N	149.4E	33		4.9	5.04	4.93	KURILE IS	19
10	20	9	10	43	44.4N	150.0E	40	5.9	5.5	6.03	5.36	KURILE IS	19
10	20	11		16	16.1S	56.3E	33			5.23	5.03	INDIAN OCEAN	33
10	20	11	8	58	44.4N	150.7E	40		4.3	4.95	4.60	KURILE IS	19
10	20	11	15	32	44.9N	151.2E	40		4.5	4.07	4.50	KURILE IS	19
10	20	11	35	47	44.2N	150.6E	45		4.4			KURILE IS	19
10	20	11	52	20	44.7N	150.2E	45	6.0	5.1	6.06	5.37	KURILE IS	19
10	20	12	4	35	44.3N	150.6E	45		4.6			KAMCHATKA	19
10	20	12	59	59	24.1N	5.1E			5.6			S ALGERIA BLASI	37
10	20	13	21	14	45.1N	150.5E	45		5.2	5.33	4.88	KURILE IS	19
10	20	13	29	27	31.1N	115.6W	14		4.3	2.84		LOWER CALIF	4
10	20	14	47	24			33			3.86	4.90	LOCAL ATU 5.3	30
10	20	14	7	37	44.6N	150.0E	45		4.2			KURILE IS	19
10	20	15	11	23	44.1N	151.1E	50		4.7	5.68	5.20	KURILE IS	19
10	20	15	29	6	43.7N	150.3E	50		4.5	4.31	4.60	KURILE IS	19
10	20	15	44	34	45.7N	149.7E	45		4.1	4.02	4.40	KURILE IS	19
10	20	15	53	48	47.4N	149.0E	45		4.2			KURILE IS	19
10	20	16		15	44.3N	149.7E	45		4.4	4.40	4.60	KURILE IS	19
10	20	17	41	27	44.2N	149.6E	45		4.8	5.24	4.86	KURILE IS	19
10	20	17	58	58	44.2N	149.6E	45		5.0	5.34	4.82	KURILE IS	19
10	20	19	47	14	44.2N	149.6E	45		4.3	5.38	4.80	KURILE IS	19
10	20	20	16	8	24.0S	177.6W	600		4.2	4.35	4.40	FIJI IS	12
10	20	21	8	21	45.0N	149.8E	40		4.5	5.15	4.50	KURILE IS	19
10	20	21	49	36	21.9N	74.7E	115			4.77	4.90	BURMA	25
10	20	22	40	10	45.7N	149.1E	40		4.1	4.07	4.50	KURILE IS	19
10	20	22	47	57	44.2N	149.7E	40		4.1	5.14	5.05	KURILE IS	19
10	20	22	52	8	45.0N	151.7E	40		4.7	5.42	5.00	KURILE IS	19
10	21			24			33			3.16	4.50	LOCAL ATU 4.5	30
10	21	1	39	57	43.9N	146.3E	33		4.6	4.11	4.50	KURILE IS	19
10	21	2	16	38	44.3N	149.9E	65		4.1			KURILE IS	19

MO	DA	HR	MN	SFC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	PEL
10	21	2	22	12	44.2N	151.6E	33		4.4			KURILE IS	19
10	21	2	31	39	22.9S	172.1E	54		4.6	4.93	4.75	LOYALTY IS	14
10	21	2	47	49	45.1N	151.3E	33		4.2	4.42	4.70	KURILE IS	19
10	21	3	3	34	44.0N	149.7E	45		4.1			KURILE IS	19
10	21	3	14	54	44.0N	149.9E	38		4.4			KURILE IS	19
10	21	9	18	46	23.6S	176.1W	33		4.9	5.28	5.14	TONGA IS	12
10	21	9	40	15	44.7N	150.3E	55		4.7	5.09	4.40	KURILE IS	19
10	21	10	7	53	45.0N	150.3E	55		4.4			KURILE IS	19
10	21	10	9	32	46.3N	148.2E	55		4.8	4.43	4.70	KURILE IS	19
10	21	13	9	5	45.2N	151.6E	45		4.8	5.05	4.85	KURILE IS	19
10	21	13	9	34	3.3S	150.2E	43		5.00	4.50		BISMARCK SEA	15
10	21	13	27	10	26.0S	179.9E	397		4.5	4.59	4.58	FUJI IS	12
10	21	13	40	39	44.6N	149.8E	33		3.9			KURILE IS	19
10	21	14	49	14	38.4N	73.3E	84		4.8	4.68	4.50	TADZHIK SSR	48
10	21	15	35	35	44.6N	150.5E	50		4.5	4.57	4.45	KURILE IS	19
10	21	15	38	24	45.5N	149.7E	55		5.4	5.55	5.00	KURILE IS	19
10	21	17	20	45	44.1N	150.3E	65		5.0	5.41	4.87	KURILE IS	19
10	21	20	39	39	44.2N	151.0E	50		4.7	5.21	4.50	KURILE IS	19
10	21	20	57	31			33			3.40	4.30	LOCAL ARE 5.6	0
10	21	21	15	49	43.3N	152.5E	20		4.4			KURILE IS	19
10	21	23	18	41	44.0N	150.3E	50		4.9	5.22	4.86	KURILE IS	19
10	21	23	29	20	44.0N	150.1E	55		5.2	5.39	4.85	KURILE IS	19
10	21	23	33	16	44.2N	149.0E	55		4.7	4.24	4.16	KURILE IS	19
10	21	23	59	25	44.9N	150.8E	33		4.2	5.26	4.90	KURILE IS	19
10	21		50	38	44.3N	114.8W	33		4.2			IDAHU	34
10	22	1	1	15	13.7N	121.6E	15		5.0	5.19	4.93	LUZON PI	22
10	22	2	29	6	44.3N	151.2E	45		4.7	5.14	5.10	KURILE IS	19
10	22	2	56	24	19.3S	175.9E	28		5.8			FUJI IS	12
10	22	3	17	15	45.0N	150.2E	45	5.5	5.2	5.24	4.80	KURILE IS	19
10	22	3	25	38	43.9N	150.3E	50		4.9	5.41	5.15	KURILE IS	19
10	22	4	18	15	16.0S	70.5W	240		3.9	2.97		S PERU	8
10	22	4	29	12	51.0N	179.4E	55		4.7	5.85	4.93	KAT IS	1
10	22	4	49	17	44.5N	149.1E	33		4.5	5.59	5.10	KURILE IS	19
10	22	6	37	44	44.8N	152.1E	50		4.2			KURILE IS	19
10	22	7	2	54	3.0S	130.0E	54		4.5	4.19	4.30	CERAM	16
10	22	10	18	14	44.2N	150.3E	50		4.9	5.25	4.83	KURILE IS	19
10	22	10	26	29	43.6N	148.1E	50		4.3			KURILE IS	19
10	22	10	45	32	44.1N	150.5E	33		4.4			KURILE IS	19
10	22	12	5	31	45.3N	151.7E	33		4.2	5.25	4.90	KURILE IS	19
10	22	12	19	17	45.1N	151.8E	20		4.3	5.51	5.00	KURILE IS	19
10	22	12	49	33	45.6N	151.7E	50		4.1	4.84	4.80	KURILE IS	19
10	22	13	27	5	44.5N	149.6E	33		4.3	4.62	4.50	KURILE IS	19
10	22	14	7	32	16.2S	173.9W	33		4.1	5.12	5.10	TONGA IS	12
10	22	15	35	25	11.6S	166.3E	80		4.5	5.07	4.66	SANTA CRUZ IS	14
10	22	16		44	43.5N	150.4E	105		4.0			KURILE IS	19
10	22	17	2	43	33.4N	25.8E	33		4.6	3.81	4.30	S OF CRILL	30
10	22	19	14	14	45.3N	149.4E	33		4.5	5.46	5.20	KURILE IS	19
10	22	19	26	14	44.3N	152.3E	33		4.6	4.10	4.50	KURILE IS	19
10	22	22	14	7	44.1N	6.0E						ALPS	36
10	22	23	3	40	44.0N	152.4E	20		4.7	4.80	4.45	KURILE IS	19
10	23		6	9	45.7N	151.6E	20		5.2	5.63	4.95	KURILE IS	19
10	23	1	1	31	44.2N	152.0E	33		4.6	4.18	3.80	KURILE IS	19
10	23	2	38	19	45.6N	150.1E	25		4.7	6.19	5.50	KURILE IS	19
10	23	3	46	32	23.5S	111.9W	33		4.9	5.11	4.40	EASTER IS REGION	43
10	23	4	24	6	31.4S	68.7W	110		4.7	4.52	4.53	ARGENTINA	8
10	23	5	32	34	45.0N	151.2E	45		4.3	5.12	4.80	KURILE IS	19
10	23	5	35	38	44.3N	149.9E	45		4.3			KURILE IS	19
10	23	6	33	25	24.0S	176.0W	119		4.4	5.06	4.75	TONGA IS	12
10	23	7	56	12	12.0S	166.5E	107		5.0	5.74	5.20	SANTA CRUZ IS	14
10	23	8	15	15	44.3N	149.4E	50		4.5	4.93	4.70	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	23	9	47	8	41.2N	144.2E	50		5.4	5.71	5.27	E OF HONSHU JAPAN	19
10	23	10	16	39	6.9S	148.4E	29			4.48	4.73	NE NEW GUINEA COAST	16
10	23	10	50	22	45.8N	152.7E	50		4.2	3.99	4.40	KURILE IS	19
10	23	11	18	18	44.4N	149.5E	45		4.6	4.44	4.05	KURILE IS	19
10	23	12	10	33	46.6N	151.9E	35		4.1	4.53	4.40	KURILE IS	19
10	23	14	45	32	12.2N	125.7E	99		5.5	4.40	4.62	SAMAR PI COAST	22
10	23	18	34	38	45.4N	152.3E	50		4.2			KURILE IS	19
10	23	20	4	7	16.6N	62.2W	33		4.3			LEEWARD IS	7
10	23	20	14	29	25.9S	178.8W	343			4.63	4.83	KERMADEC IS	12
10	23	20	24	5	19.4N	155.5W	5		5.0	5.33	5.13	HAWAII	39
10	23	21	18	14	44.3N	150.7E	40		4.3			KURILE IS	19
10	23	22	11	13	44.0N	151.3E	20		4.7	4.74	4.90	KURILE IS	19
10	24	1	6	26	44.5N	150.3E	45	5.7	5.0	5.44	5.00	KURILE IS	19
10	24	6	44	18	4.3N	78.4W	38		5.0	5.27	4.78	W COLOMBIA COAST	8
10	24	6	57	24	19.2N	121.3E	72		4.8	4.79	4.86	BABUYAN IS PI	22
10	24	7	24	3	4.4N	78.5W	33		4.4	4.95	4.70	W COLOMBIA COAST	8
10	24	7	26	24	4.9S	102.9E	50	5.7	6.1	6.44	5.69	S SUMATRA COAST	24
10	24	8	3	56	45.1N	150.0E	55	4.2				KURILE IS	19
10	24	9	52	37	44.4N	114.8W	33	3.8				IDAHO	34
10	24	11	3	52	45.7N	151.1E	45	4.0				KURILE IS	19
10	24	13	1	36	58.1N	144.7W	33	3.9				GULF OF ALASKA	1
10	24	13	45	10	44.0N	150.8E	40		5.0	5.62	5.40	KURILE IS	19
10	24	15	24	6	44.8N	149.9E	45		4.5	5.02	4.90	KURILE IS	19
10	24	15	3	31	38.4N	70.3E	183			3.83	4.20	TADZHIK SSR	48
10	24	19	17	10	28.3N	128.5E	33		5.1	5.57	5.10	RYUKYU IS	20
10	24	20	18	13	44.4N	149.7E	45		5.0	5.28	4.86	KURILE IS	19
10	24	21	53	25	45.3N	151.5E	40		4.2	4.40	4.70	KURILE IS	19
10	25	1	8	36	44.7N	149.5E	50		4.0	4.46	4.70	KURILE IS	19
10	25	1	30	57	62.3S	156.9E	33					BALLENY IS	45
10	25	3	58	59	51.6N	156.4E	110		4.2			KAMCHATKA	19
10	25	4	59	24			33			3.75	4.90	LOCAL ANT 4.2	8
10	25	5	58	51	45.0N	150.7E	50		4.7			KURILE IS	19
10	25	6	2	7	52.0N	174.8E	70		4.6	4.84	4.63	NEAR IS	1
10	25	6	27	58	44.3N	150.4E	50		3.9	4.51	4.60	KURILE IS	19
10	25	7	29	2	45.7N	151.3E	33		4.4	4.62	4.30	KURILE IS	19
10	25	8	8	12	42.7N	150.8E	45		4.4			KURILE IS	19
10	25	8	37	54						3.06	4.40	LOCAL ANT 3.0	8
10	25	10	17	57	45.3N	150.2E	33			5.19	4.60	KURILE IS	19
10	25	11	12	57	44.0N	151.1E	45		4.6			KURILE IS	19
10	25	11	57	55	45.1N	149.3E	70		4.1	4.26	4.20	KURILE IS	19
10	25	12	33	5	44.5N	150.2E	45		4.2	4.77	4.70	KURILE IS	19
10	25	15	5	22	35.4N	116.9W	14		4.5			CALIF	3
10	25	15	7	10	45.2N	150.6E	33		4.0	5.11	4.80	KURILE IS	19
10	25	15	20	40	3.7S	104.0W	23		4.5	5.27	5.10	W OF GALAPAGOS IS	44
10	25	15	24	51	11.7S	165.9E	149		4.5	4.35	4.30	SANTA CRUZ IS	39
10	25	16	25	24	2.2S	138.3E	33		5.4	4.54	4.80	W NEW GUINEA	16
10	25	16	41	46	44.3N	149.7E	20		4.3			KURILE IS	19
10	25	19	1	57	45.4N	150.6E	33		4.2	4.65	4.70	KURILE IS	19
10	25	19	58	58	12.3N	144.5E	29		5.4	5.49	5.05	MARIANA IS	17
10	25	20	57	15	10.5S	164.7E	26		4.6			SANTA CRUZ IS	14
10	25	22	49	42	36.9N	95.2E	33		5.1	5.08	4.97	TSINGHAI CHINA	27
10	25	23	21	43	12.4N	144.1E	57		4.7	5.16	4.80	MARIANA IS	18
10	26	1	11	34	10.4S	164.6E	33		4.3			SANTA CRUZ IS	14
10	26	3	55	40	44.5N	150.1E	55	5.5	5.1	5.18	4.97	KURILE IS	19
10	26	5	1	32	43.7N	157.5E	40		5.1	4.92	4.30	KURILE IS	19
10	26	5	48	21			33			3.12	3.90	LOCAL ARL 4.2	8
10	26	5	59	44	44.5N	149.8E	60		5.1	5.25	4.90	KURILE IS	19
10	26	6	25	19	44.6N	154.2E	60		4.3			KURILE IS	19
10	26	6	27	54	44.8N	149.6E	55		4.5	4.32	4.60	KURILE IS	19
10	26	6	55	51	44.7N	149.6E	60		4.0			KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	26	7	24	29	51.2N	177.5W	33		4.6	4.70	4.20	ANDREANOF IS	1
10	26	8	35		20.7S	169.0E	33		4.2	4.31	4.35	LOYALTY IS	14
10	26	10	32	37	44.4N	149.5E	55		4.3			KURILE IS	19
10	26	11	21	48	44.7N	149.7E	55	5.1	5.4	5.60	4.97	KURILE IS	19
10	26	11	31	53	44.6N	149.8E	55		5.1	4.68	4.10	KURILE IS	19
10	26	11	33	16								KURILE IS	19
10	26	12	33	50	15.8S	174.0W	115		5.5	6.07	5.42	TONGA IS	12
10	26	12	56	47	2.7S	77.8W	33		4.2	3.37	4.25	ECUADOR	8
10	26	14	44	49	44.6N	149.7E	60		4.2	4.31	3.90	KURILE IS	19
10	26	18	55	39	7.0S	129.7E	125		5.0	4.65	4.57	BANDA SEA	23
10	26	19	5	58	44.1N	148.9E	45		4.5			KURILE IS	19
10	26	20	20	15	43.1N	111.2E	35		4.3			IDAHU	34
10	26	22	41	29	5.2S	152.0E	73		5.9	5.82	5.32	NEW BRITAIN	15
10	26	23	58	59	43.8N	151.2E	33		5.0	4.92	4.30	KURILE IS	19
10	27	1	30	32	29.5S	101.2W	33		4.6	5.05	4.40	EASTER IS REGION	43
10	27	4	22	38	44.4N	150.2E	60		3.9			KURILE IS	19
10	27	5	20	18	20.6S	178.6W	541		4.4	4.27	4.66	FIJI IS	12
10	27	5	49	9	44.2N	149.5E	20		4.1	4.09	4.50	KURILE IS	19
10	27	7	45	26	14.7S	71.7W	121		4.2	2.37	4.00	S PERU	8
10	27	8	45	43	17.9S	178.5W	586		5.0	5.52	4.90	FIJI IS	13
10	27	10	38	48	22.8S	175.2W	35		4.8	5.18	5.10	TONGA IS	12
10	27	11	1	4			33			3.49	4.60	LOCAL PMG 4.0	16
10	27	11	2	31			33			3.47	3.80	LOCAL ATU 2.1	30
10	27	12	2	57	5.6N	79.4W	32		4.0	4.51	4.30	W COLOMBIA COAST	6
10	27	13	2	44	43.5N	89.0E	56		4.5	4.04	4.30	SINKIANG CHINA	27
10	27	14	14	18	45.4N	150.0E	60		4.3	5.58	5.10	KURILE IS	19
10	27	14	50	20	33.1N	115.6W	14	4.2	4.3			CALIF	3
10	27	14	56	55	33.0N	115.7W	14	4.1				CALIF	3
10	27	15	24	11	33.0N	115.6W	14		4.2			CALIF	3
10	27	15	26	18	33.9S	15.3W	33			4.85	4.57	TRISTAN DA CUNHA	32
10	27	15	30	43	33.0N	115.7W	14					CALIF	3
10	27	15	56	50	44.2N	114.8W	33		3.6			IDAHU	34
10	27	16	12	2			33			3.75	4.30	LOCAL ATU 2.1	30
10	27	18	7	44	33.0N	115.6W	14		4.5			CALIF	3
10	27	18	12	49	33.2N	115.7W	14		4.2			CALIF	3
10	27	18	22	5	33.0N	115.7W	14		4.5			CALIF	3
10	27	18	24	43	24.3S	176.1W	33		5.3	5.82	5.48	TONGA IS	12
10	27	18	49	36	33.0N	115.6W	14		4.6			CALIF	3
10	27	19	36	27	16.8S	173.5W	33		4.5	4.25	4.60	TONGA IS	12
10	27	19	38	15	33.1N	115.7W	14					CALIF	3
10	27	19	53	50	44.5N	149.4E	65		4.0			KURILE IS	19
10	27	20	5	38	44.5N	150.1E	50	5.1	5.2	5.39	4.95	KURILE IS	19
10	27		30	39	33.0N	115.6W	14					CALIF	3
10	28		37	21	1.9N	124.8E	232		5.0	4.86	4.82	N CELEBES	23
10	28	2	25	8	14.8N	90.8W	33		3.9			GUATEMALA	5
10	28	2	50	30	13.6S	176.9W	38		4.1	4.23	4.50	PERU	8
10	28	4	58	42	45.4N	151.3E	45		4.4	5.20	5.00	KURILE IS	19
10	28	6	15	34	46.5N	154.2E	33		4.1			KURILE IS	19
10	28	7	55	12	24.3S	176.0W	33	5.2	5.4	6.10	5.50	TONGA IS	12
10	28	8	14	16	33.0N	115.6W	14		4.4			CALIFORNIA	3
10	28	10	3	48	45.4N	150.0E	45		4.6			KURILE IS	19
10	28	10	18	10	44.6N	149.6E	50		4.2	4.55	4.10	KURILE IS	19
10	28	11	23	39	57.1S	147.1E	33			4.98	5.00	S OF AUSTRALIA	45
10	28	12	3	19	52.8N	159.8E	33	5.2	5.7	6.23	5.49	E KAMCHATKA COAST	19
10	28	14	13	32	45.3N	151.3E	45		4.1	5.20	4.15	KURILE IS	19
10	28	14	36	20	45.7N	150.3E	55		4.5	5.35	5.10	KURILE IS	19
10	28	15	55	36	33.1N	115.7W				2.76	3.80	CALIFORNIA	3
10	28	18	5	10	45.0N	151.7E	60		4.3	4.70	4.90	KURILE IS	19
10	28	18	9	38	43.9N	150.9E	33		4.2	3.47	4.10	KURILE IS	19
10	28	18	41	58			33			4.06	4.10	LOCAL	30



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
10	28	19	15	12	42.8S	73.7W	30		4.9	5.60	5.07	S CHILE	9
10	28	19	59	15	24.5S	179.9E	532		5.0	5.59	5.22	FIJI IS	12
10	28	20	36	56	44.8N	149.6E	45		4.7	5.28	4.83	KURILE IS	19
10	28	21	48	24	49.9N	154.7E	105		4.8	4.99	4.36	KURILE IS	19
10	29	2	23	53	44.6N	151.2E	45		4.6	4.43	4.70	KURILE IS	19
10	29	2	57	33	45.6N	151.2E	25		4.4			KURILE IS	19
10	29	4	31	34			33			3.18	3.80	LOCAL MAN 3.0	22
10	29	5	39	33	43.1N	111.6W	33		4.0			IDAHO	34
10	29	6	4	53	27.8S	66.9W	106		3.7			ARGENTINA	8
10	29	7	1	42	40.4N	124.7W	38		4.7	3.41	4.50	N CALIFORNIA COAST	3
10	29	7	9		45.3N	150.7E	55		4.5			KURILE IS	19
10	29	7	42	11	43.2N	111.1W	33					IDAHO	34
10	29	10	56	10	18.0S	178.3W	494		3.6	3.92	4.50	FIJI IS REGION	13
10	29	14	4	22	41.5N	127.7W	33		3.8			OREGON COAST	3
10	29	15	49	10	24.8S	68.6W	67		5.0	5.44	5.10	N CHILE	8
10	29	16	55	49	26.5S	177.5W	65		4.2	4.49	4.46	KERMADEC IS	12
10	29	20	22	16	26.2S	177.8W	49		4.8	5.16	4.68	KERMADEC IS	12
10	29	22	22	38	24.4S	176.1W	33		4.9	5.29	4.96	TONGA IS REGION	12
10	29	22	41	22	43.0N	17.1E						YUGOSLAVIA	36
10	30			58	44.2N	150.6E	50		4.2	3.36	4.00	KURILE IS	19
10	30		35	40	44.7N	150.0E	55		4.3	5.24	4.50	KURILE IS	19
10	30	1	5	37	43.4N	151.2E	45		4.1	3.35	4.00	KURILE IS	19
10	30	1	17	31	4.8S	77.9W	20		5.3	5.63	5.14	N PERU	8
10	30	2	39	15			33			4.25	4.90	LOCAL SHL 4.3	26
10	30	2	59	24	43.6N	151.4E	33		4.4	4.06	4.10	KURILE IS	19
10	30	5	31	48	26.6S	178.0W	240		4.0	4.13	4.13	KERMADEC IS REGION	12
10	30	5	36	53	15.4S	166.2E	33		4.6			SANTA CRUZ IS	14
10	30	9	28	30	44.9N	149.1E	45		4.1			KURILE IS	19
10	30	10	51	46	44.6N	150.2E	55		4.4	5.20	4.50	KURILE IS	19
10	30	15	21	7	44.8N	150.2E	45		4.5	4.70	4.73	KURILE IS	19
10	30	17	36	23			33			3.84	4.60	LOCAL ARE 6.6	8
10	30	18	29	35	72.2N	1.4W	33		4.2	2.70	3.90	ARCTIC OCEAN	40
10	30	22	42	27	43.5N	150.5E	33		4.4	4.80	4.62	KURILE IS	19
10	31	3	17	42	21.8S	175.0W	33	6.1	5.2	5.97	5.15	TONGA IS	12
10	31	4	25	38	23.9S	179.8W	464		4.5	4.99	4.86	FIJI IS	12
10	31	8	8	52	43.0N	111.3W	33		3.0			IDAHO	34
10	31	8	51	42	17.9S	178.8W	637		4.3	5.34	5.02	FIJI IS	13
10	31	9	39	47	51.8N	173.8W	70		3.9	4.17	3.80	ALEUTIAN IS	1
10	31	9	54	25	19.3S	177.4W	555		3.9	4.36	4.60	FIJI IS	12
10	31	9	57	1	27.4N	55.6E	35		5.3	4.85	5.05	S IRAN	33
10	31	10	7	26	46.6S	96.3E	33		5.2	4.88	4.90	INDIAN OCEAN	33
10	31	10	47	25	10.5S	162.0E	38		4.8	4.88	4.76	SOLOMON IS	15
10	31	13	38	20	22.0S	169.9E	33		3.6	5.00	5.00	LUYALTY IS	14
10	31	17	19	39	51.6N	178.6W	33		4.1			ANDREANOF IS	1
10	31	17	48	46	44.2N	150.0E	70		4.4			KURILE IS	19
10	31	19	28	47	18.2N	103.0W	33		3.5	3.76	3.60	MEXICO	34
10	31	20	10	54	37.2N	70.0E	105		4.5	4.52	3.85	HINDU KUSH REGION	48
10	31	22	11	27			33			3.45	4.70	LOCAL ATU 4.2	30
10	31	23	19	15	4.9S	77.7W	60		4.5	3.89	4.35	N PERU	8
10	31	23	54	8	43.7N	151.2E	33		4.5	4.42	4.70	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	1	1	34	12	62.9N	3.3E	33		4.5	3.31	4.55	NE OF SHETLAND IS	36
11	1	2	26	1	5.5N	82.6W	35		4.6			PANAMA	6
11	1	2	51	36	45.2N	152.2E	40		4.3	4.07	4.50	KURILE IS	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	1	3	52	26	51.7N	159.8E	33		4.4	6.18	5.05	E KAMCHATKA COAST	19
11	1	4	29	43	29.5S	64.2W	33		4.0			ARGENTINA	8
11	1	7	2	42	14.6N	53.6E	33		5.1	4.88	4.40	GULF OF ADEN	37
11	1	9	28	22	22.8S	176.0W	33		4.5	5.19	4.75	TONGA IS	39
11	1	10	49	45	22.4S	65.7W	137		3.8			ARGENTINA	8
11	1	11	34	56	13.6N	90.1W	128		4.4			EL SALVADOR COAST	5
11	1	20	59	28	22.5S	176.8W	71		5.4	6.07	5.12	TONGA IS	12
11	1	22	41	24	44.9N	148.9E	60		5.5	6.14	5.14	KURILE IS	19
11	2		44	34	34.3S	71.1W	89		3.8	4.16	4.20	S CHILE	8
11	2	1	41	58	6.2S	154.4E	63		5.9	3.88	4.72	NEW BRITAIN	15
11	2	8	47	43	32.4N	113.7W	14		4.7	2.71	4.25	SUNORA MEXICO	4
11	2	9	17	18	44.6N	151.2E	50		4.6	4.75	4.60	KURILE IS	19
11	2	10	13	2	51.5N	179.9W	33		4.1			ANDRLANOF IS	1
11	2	10	13	15			33			3.37	4.60	LOCAL PMG 4.6	16
11	2	12	45	16	35.1N	5.1W	33		4.1	4.01	4.10	S SPAIN	31
11	2	16	7	13	12.5S	74.7W	105		4.3	4.10	4.40	PERU	8
11	2	17	53	27	44.0N	150.5E	50		5.0	5.32	4.90	KURILE IS	19
11	2	18	58	10	33.0N	115.5W	33			2.51	3.35	CALIF	3
11	2	19	51	58	43.3N	29.5W	33		4.2	4.94	4.85	ATLANTIC OCLAN	32
11	2	20	12	27	5.3S	133.9E	38		4.9	3.79	4.15	TANIMBAR IS	16
11	2	20	40	32	22.2S	175.6W	33		4.4	4.76	4.70	TONGA IS	12
11	2	21	35	30	24.3S	68.1W	106		4.8	5.79	5.10	CHILE-ARGENTINA	8
11	2	22	21	21	1.9S	138.9E	33		5.2	5.15	5.05	NW NEW GUINEA COAST	15
11	3	1	15	25	45.2N	151.4E	45		4.2	5.09	4.70	KURILE IS	19
11	3	1	37	4	45.4N	151.0E	33		4.3			KURILE IS	19
11	3	2	14	24	23.9N	122.6E	33		4.6	4.67	4.86	OFF L FORMOSA COAST	21
11	3	3	10	13	3.5S	77.8W	33	6.3	6.0	7.17	5.70	PERU-EQUADOR	8
11	3	4	24	48	4.3S	78.3W	146		4.2	4.23	4.10	PERU-EQUADOR	8
11	3	4	37	25	49.5N	155.6E	50		4.9	4.85	4.56	S KAMCHATKA	19
11	3	7	38	11	15.6S	73.3W	112		4.8	5.47	4.90	S PERU	8
11	3	12		41	43.4S	145.8E	33			3.92	5.00	TASMANIA	36
11	3	12	2	28	3.7S	78.3W	33		4.5	4.82	4.78	NEAR EQUADOR COAST	8
11	3	14	31	57	14.0S	165.9E	50		4.9	4.62	4.20	NEW HEBRIDES IS	15
11	3	14	35	59	39.2N	21.1E	29		4.3	4.12	5.10	NEAR W GREECE COAST	30
11	3	15	59	5	38.4N	20.5E	33		4.1	3.43	4.70	IONIAN IS	30
11	3	17	10	11	16.9N	61.6W	34		4.1			LEEWARD IS	7
11	3	18	26	3	43.0N	111.7W	33		4.2	2.08	3.65	IDAHU	34
11	3	19	22	54	45.3N	150.1E	45		4.7	5.30	4.77	KURILE IS	19
11	3	22	54	37	44.3N	149.7E	45		4.3			KURILE IS	19
11	4		52	53	45.2N	150.0E	66		4.2	4.61	4.80	KURILE IS	19
11	4	1	3	13	2.3N	79.7W	62		4.1	3.97	4.05	OFF W COLUMBIA COAST	8
11	4	1	14	33	15.1S	167.3E	154	6.9	5.8	5.95	5.10	NEW HEBRIDES	14
11	4	1	17	9	6.8S	129.6E	80			6.20	6.33	BANDA SEA	24
11	4	2	14	4	6.9S	129.5E	76		5.3	6.08	5.60	BANDA SEA	23
11	4	2	36	41	7.0S	129.5E	129		5.5	5.76	5.13	BANDA SEA	23
11	4	3	29	31	15.0S	75.8W	52		4.0	2.92	4.15	S PERU COAST	8
11	4	3	43	16	6.9S	129.8E	100		5.1	5.24	5.00	BANDA SEA	24
11	4	5		29	7.0S	129.5E	115			4.76	4.60	BANDA SEA	24
11	4	5	22	59	6.8S	129.8E	80		5.4	5.45	5.08	BANDA SEA	24
11	4	6	9	20	44.5N	150.6E	40		4.2	4.68	4.80	KURILE IS	19
11	4	8	6	15	44.0N	150.0E	33		4.2	4.57	4.80	KURILE IS	19
11	4	8	35	52	44.8N	149.3E	33		4.3	5.02	4.76	KURILE IS	19
11	4	15	13	35	7.0S	129.4E	132		5.0	5.12	4.85	BANDA SEA	23
11	4	15	45	46	44.5N	11.0E	16		4.1	3.43	4.70	ITALY	31
11	4	18	22	43	23.5S	176.1W	33		4.6	5.35	4.90	TONGA IS	12
11	4	19	52	4	6.9S	129.5E	104			5.05	4.80	BANDA SEA	23
11	4	21	12	12	36.3N	71.3E	148		4.7	3.94	4.20	HINDU KUSH	48
11	4	22	17	8	6.8S	129.8E	122		5.4	5.59	5.10	BANDA SEA	23
11	4	22	25	2	9.0S	139.7E	33			5.93	5.52	W NEW GUINEA	16
11	5	2	56	51	55.5N	157.0E	33		4.2	3.47	4.10	KAMCHATKA	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	5	3	44	42	43.3N	111.2W	33		3.9			IDAHO	34
11	5	5	16	31	7.3S	129.2E	141		5.1	4.48	4.27	BANDA SEA	24
11	5	6	6	19	6.9S	129.4E	94		4.7	5.00	4.66	BANDA SEA	23
11	5	8	18	4	24.8S	179.7E	606		4.4	4.29	4.20	FIJI IS	12
11	5	8	43	25	43.8N	150.3E	45		4.2	6.52	5.30	KURILE IS	19
11	5	8	43	34	7.2S	129.0E	112		4.9	5.19	4.71	BANDA SEA	24
11	5	9	18	43	43.5N	150.9E	40		4.6	4.61	4.65	KURILE IS	19
11	5	9	33	36	27.6S	176.2W	92		4.5	4.48	4.62	KERMADEC IS	12
11	5	16	2	5	26.1S	178.9E	56		4.6	5.24	4.43	FIJI IS	13
11	5	20	59	26	44.6N	148.8E	33		4.1	4.35	4.50	KURILE IS	19
11	5	21	46	23	47.4N	147.1E	45		4.4	4.25	4.40	KURILE IS	19
11	5	22	45	3	27.8N	92.4W	33		4.8		3.50	GULF OF MEXICO	34
11	5	23	10	54	55.5S	28.4W	33			5.55	5.30	SANDWICH IS REGION	10
11	5	23	52	56	1.7N	126.4E	28		5.8	6.05	5.15	MOLUCCA PASSAGE	23
11	6	1	1	7	12.8S	73.9W	86		4.4	4.28	5.20	VENEZUELA	8
11	6	1	19	37	7.8S	129.8E	158		4.9	4.62	4.47	BANDA SEA	24
11	6	1	28	47	4.2S	77.7W	170		4.1	4.04	4.00	N PERU	8
11	6	2	13	16	2.6S	138.4E	33		5.7	6.11	5.35	W NEW GUINEA	16
11	6	2	55	54	2.5S	138.6E	32		4.8	5.50	5.20	W NEW GUINEA	16
11	6	3		12	2.2S	138.7E	43		5.1	6.07	5.16	W NEW GUINEA	16
11	6	4	6	45	2.4S	138.6E	22		5.3	4.88	4.85	W NEW GUINEA	16
11	6	4	35	9	2.5S	138.4E	33			4.47	4.60	W NEW GUINEA	16
11	6	6	28	55	30.8S	179.9E	411		4.7	5.07	4.86	SAMOA IS	12
11	6	7	35	26	2.5S	138.6E	38		5.5	4.91	4.75	W NEW GUINEA	16
11	6	9	1	12	7.1S	129.2E	90		5.5	5.85	4.76	BANDA SEA	24
11	6	9	24	49	46.3N	154.8E	33		5.4	5.83	5.22	KURILE IS	19
11	6	10	53		3.0S	138.7E	16		5.8	4.76	4.65	W NEW GUINEA	16
11	6	11	33	8	2.8S	139.1E	95		5.2	4.72	4.68	W NEW GUINEA	16
11	6	17	7	22	9.8S	113.6E	230			5.09	4.82	NEAR S JAVA COAST	24
11	6	18	33	26	16.7S	69.7W	174		4.7	4.52	4.76	PERU-BOLIVIA BORDER	8
11	6	21	8	35	38.7N	22.8E	100		4.0	4.15	4.33	GREECE	30
11	6	21	49	57	12.2N	88.0W	37		4.1	4.16	4.10	OFF EL SALVADOR COAST	5
11	6	23	55	10	7.0S	129.7E	229		5.3	5.86	5.20	BANDA SEA	24
11	7		46	53	42.7N	149.3E	30		4.1	3.47	4.10	KURILE IS	19
11	7	2	42	58	2.5S	138.7E	69		4.9	4.66	4.80	W NEW GUINEA	16
11	7	3	24	59	44.8N	150.1E	40		4.0	4.87	4.50	KURILE IS	19
11	7	6	12	23	36.5N	141.7E	49		3.4	3.35	4.00	OFF E HUNSHU COAST	19
11	7	9	3	53	44.2N	149.7E	45		4.0			KURILE IS	19
11	7	9	22	53	44.2N	151.1E	50		4.4	5.34	4.94	KURILE IS	19
11	7	12	55	26	14.1N	146.2E	48		5.0	5.64	4.84	MARIANA IS REGION	17
11	7	15	12	34	45.5N	150.0E	40		4.1	5.00	4.80	KURILE IS	19
11	7	15	53	42	24.2S	176.4W	33		5.1	5.73	5.23	TONGA IS	12
11	7	16	26	37	11.3S	166.1E	89		4.9	5.44	5.01	SANTA CRUZ IS	14
11	7	16	45	59	50.2S	114.9W	33		4.7	5.41	5.06	S PACIFIC OCEAN	43
11	7	17	34	58	24.4S	176.0W	33		4.5	5.45	5.03	TONGA IS	12
11	7	18	55	48	36.0N	25.4E	33		4.0	3.37	4.35	N OF KURILE	30
11	7	20	15	22	29.4S	178.1W	110		3.8	5.44	5.00	KERMADEC IS	12
11	7	20	37	54	44.9N	151.9E	29		4.5	5.32	4.83	KURILE IS	19
11	8	2	56	40	27.3S	70.1W	40		4.6	4.78	4.70	CENTRAL CHILE	8
11	8	4	24	14	23.0S	170.9E	35		4.8	4.99	4.74	NEW HEBRIDES REGION	14
11	8	5	5	3	21.5S	179.7W	659		4.6	4.98	4.72	TONGA IS	12
11	8	8	8	9	45.0N	150.9E	40		4.8	5.96	5.40	KURILE IS	19
11	8	9	59	24	16.5S	28.5E	33		5.5	5.41	5.10	N RHODESIA	37
11	8	11	6	1	26.7N	110.4W	33		4.4			CALIF GULF	4
11	8	11	22	29	44.0N	150.4E	40		4.3			KURILE IS	19
11	8	14	35	26	44.4N	149.4E	33		4.3	4.67	4.50	KURILE IS	19
11	8	16	13	36	2.7N	128.4E	216		5.7	5.16	5.20	MOLUCCA PASSAGE	23
11	8	19	22	55	3.7S	78.2W	33		4.5			ECUADOR	8
11	9	1	13	13	11.9S	166.6E	112		4.3	4.26	4.50	SANTA CRUZ IS	39
11	9	2	46	45	56.8N	34.6W	33		4.8	4.84	4.80	S ICELAND	32

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	9	5	37	15	5.6S	105.5E	33		4.8	4.97	4.87	SUMATRA	24
11	9	8	35	25	45.6N	150.0E	45		4.2	5.42	5.05	KURILE IS	19
11	9	8	51	19	45.3N	150.8E	33		5.2	5.56	5.26	KURILE IS	19
11	9	11	13	31	45.6N	150.9E	40		4.4	4.53	4.45	KURILE IS	19
11	9	12	54	30	.1S	25.1W	33		5.2	4.77	4.40	ATLANTIC OCEAN	32
11	9	18	50	42	7.1S	129.4E	80		5.2	4.78	4.40	BANDA SEA	16
11	9	19	31	38						3.03	4.40	LOCAL SHL 5.5	26
11	9	20	21	32	11.2S	165.6E	47		4.8	4.11	4.33	SOLOMON IS	14
11	9	21	15	30	9.0S	71.5W	600	6.9	5.9	6.52	5.16	W BRAZIL	8
11	9	23	14	13	8.5S	72.1W	563		4.4	4.34	3.90	W BRAZIL	8
11	10		30	31	2.0S	139.1E	129		4.8	4.23	4.40	W NEW GUINEA	16
11	10	1		39	9.2S	71.5W	600	6.4	5.6	6.26	5.25	W BRAZIL	8
11	10	1	35	41	9.4S	71.3W	600		4.1	3.60	4.15	W BRAZIL	8
11	10	4	31	51	6.9S	129.3E	181		4.4	4.23	4.13	BANDA SEA	24
11	10	4	58	53	26.5N	93.2E	66			4.77	4.90	NE INDIA	26
11	10	7	18	8	12.9N	88.5W	45		4.2	2.52	4.00	EL SALVADOR COAST	6
11	10	8	50	6	44.5N	149.4E	45		4.9	5.08	4.77	KURILE IS	19
11	10	11	18	17			33			4.33	4.90	LUCAL IST 7.2	30
11	10	11	18	32	36.5N	25.9E	34		5.4	4.81	4.50	AEGEAN IS REGION	30
11	10	14	44	32	45.1N	151.9E	40		4.2			KURILE IS	19
11	10	15	58	35	47.4N	147.4E	40		4.2			KURILE IS	19
11	10	16	18	58			33			3.56	4.70	LOCAL SHL 6.4	26
11	10	17	17	43	44.4N	149.0E	40		5.5	6.04	4.94	KURILE IS	19
11	10	18	8	44	44.0N	147.3E	45		4.4			KURILE IS	19
11	10	18	37	18	37.3N	20.9E	33		4.5	4.10	4.54	IONIAN SEA	30
11	10	19	20	39	26.2S	178.3E	607		4.3	5.32	4.97	S OF FIJI IS	12
11	11		10	26	43.8N	149.5E	55		4.7	4.09	4.13	KURILE IS	19
11	11		15	5	7.0S	129.5E	132		5.6	5.08	4.93	BANDA SEA	24
11	11		37	11	44.3N	149.2E	45		4.4			KURILE IS	19
11	11	5	6	3	44.3N	149.2E	40		4.5			KURILE IS	19
11	11	5	45	50	43.9N	128.8W	33		4.1	3.24	4.50	OFF OREGON COAST	3
11	11	7	32	43	56.0S	126.4W	33		4.6	4.32	4.25	S PACIFIC OCEAN	43
11	11	9	49	43	44.6N	148.9E	55		4.7	5.20	4.95	KURILE IS	19
11	11	11	29	6	16.9S	174.4W	185		5.2	5.70	5.27	TONGA IS	14
11	11	14	43	16	32.0S	71.0W	21		4.2			C CHILE	8
11	11	16	21	14	32.8S	95.5W	33		4.2	4.63	4.60	EASTER IS REGION	43
11	11	19	49				33			4.30	4.10	LOCAL PMO 4.1	16
11	11	19	54	9	9.1S	71.4W	585		4.9	4.40	4.92	W BRAZIL	8
11	11	20	18	40	4.0N	82.6W	33		4.8	5.39	5.30	OFF W COAST COLOMBIA	8
11	12		31	47	44.0N	149.2E	33		4.4	3.43	4.10	KURILE IS	19
11	12	1	17	10	14.6S	173.3W	33		4.2	3.39	4.60	SAMOA IS	12
11	12	4	57	12	44.8N	110.6W	33					YELLOWSTONE PARK	34
11	12	6	7	53	27.9S	176.2W	33		4.7	5.50	4.46	KERMADEC IS	12
11	12	7	6	31	34.5N	20.7E	60		5.0	5.26	4.40	NEAR SW THURLEY IS	1
11	12	7	56	54	44.2N	149.0E	45		4.9	4.84	4.50	KURILE IS	19
11	12	8	33	16	44.2N	149.2E	50		4.8	4.97	4.67	KURILE IS	19
11	12	12	26	45	15.8S	72.4W	33		4.0	3.38	4.60	S PERU	8
11	12	12	44	2	22.6S	175.5W	33		4.5	5.41	5.05	TONGA IS	12
11	12	12	57	17	51.5N	179.9E	13		4.3			ANDORAN IS	1
11	12	12		1	44.2N	149.4E	50		4.9	5.31	4.90	KURILE IS	19
11	12	14	26	18	33.1S	68.6W	19		4.3			ARGENTINA	8
11	12	15	28	44	31.7N	78.5E	33		4.6	4.53	4.66	N INDIA	47
11	12	17	41	53	30.4S	177.8W	60		4.4	6.06	5.00	KERMADEC IS	12
11	12	20	54	4	7.1S	129.5E	131			3.80	4.06	BANDA SEA	24
11	12	21	48	43	27.7S	176.3W	33		4.8	5.60	5.20	KERMADEC IS	12
11	12	1	15	37	44.5N	149.2E	50		4.1	3.94	4.40	KURILE IS	19
11	12	1	34	46	34.6N	137.1E	105		4.2			S HONSHU	19
11	12	4	18		8.9S	71.5W	545		3.6			W BRAZIL	8
11	12	5	15	17	7.8N	125.9E	33		5.6	5.18	4.80	MINDANAO PI	22
11	12	5	1	42	34.4N	138.3E	80		4.4			S HONSHU COAST	19

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	13	6	17	33	38.3N	112.7W	33		3.8			UTAH	34
11	13	7	32	42	44.2N	149.6E	40		4.2	4.58	4.50	KURILE IS	19
11	13	8	38	58	4.9S	132.3E	33			4.17	4.35	BANDA SEA	23
11	13	9	1	41	9.0N	73.3W	328		4.0			COLOMBIA	7
11	13	11	18	29	23.8S	179.9W	520		4.9	5.79	5.30	FIJI IS	12
11	13	12	34	52	51.9N	177.6W	33		3.9			ANDREANOF IS	1
11	13	13	9	1	44.9N	148.8E	40		4.7			KURILE IS	19
11	13	15	46	49	22.8S	175.3W	33		4.2	4.62	4.60	TONGA IS	12
11	13	15	50	48	44.3N	148.2E	33		4.3			KURILE IS	19
11	13	16	6	36	22.8S	175.3W	33		4.4	5.14	4.70	FIJI IS	12
11	13	16	25	17	45.5N	150.0E	50		4.4	4.67	4.56	KURILE IS	19
11	13	17	18	50	22.9S	175.3W	33		5.1	5.46	5.08	TONGA IS	12
11	13	18	4	11	22.9S	175.5W	33		4.5	5.11	4.83	TONGA IS	12
11	13	20	3	7	25.3N	109.3W	14		4.6	2.60	4.15	CALIF GULF	4
11	14		20	3	30.1S	177.4W	42		4.7	5.61	4.90	KERMADEC IS	12
11	14	2	19	36						3.07	4.40	LOCAL LPS 2.8	6
11	14	3	58	49	22.6N	142.9E	177		4.9	4.47	4.45	CAROLINE IS	18
11	14	4	35	48	17.5S	167.7E	33		4.8	5.27	4.74	NEW HEBRIDES IS	14
11	14	5	6	8	45.7N	151.2E	15		4.6	4.76	4.53	KURILE IS	19
11	14	9	5	48	15.1N	93.9W	33		4.9	6.01	5.50	OFF CHIAPAS MEXICO	5
11	14	10	17	27	30.5N	138.8E	439		3.9	4.02	4.10	S HONSHU JAPAN	19
11	14	13	37	2	52.3N	179.8W	100		4.4	5.05	4.10	ALEUTIAN IS	1
11	14	14	1	18	17.4S	167.6E	33		4.5	4.53	4.60	NEW HEBRIDES IS	14
11	14	14	5	36	17.5S	167.7E	33		4.6	4.81	4.77	NEW HEBRIDES	14
11	14	17	59	5	15.0N	94.2W	33		4.2	3.10	4.40	OFF CHIAPAS MEXICO	5
11	14	20	11	4	19.0S	168.8E	33		4.6	4.42	4.20	NEW HEBRIDES	14
11	14	21	23	16			33			3.36	4.00	LOCAL SHI 6.0	29
11	14	21	27	26	45.4N	151.4E	50		4.4	5.17	5.00	KURILE IS	19
11	14	23	37	50	17.4S	167.8E	33		4.5	4.48	4.40	NEW HEBRIDES IS	14
11	14	00	18	52	4.7S	76.8W	152		4.3			N PERU	8
11	15		44	39	44.4N	149.1E	45		4.7	4.39	4.50	KURILE IS	19
11	15	1	11	57	3.3S	129.1E	54			4.54	4.47	CERAM	23
11	15	5	15	47	46.1N	14.6E	33		3.8	2.58	4.10	YUGOSLAVIA	31
11	15	6	34	7	45.6N	153.2E	33		4.1	5.04	4.73	KURILE IS	19
11	15	8	21	23	44.4N	149.2E	55		4.3	4.41	4.20	KURILE IS	19
11	15	15	17	8	52.9N	164.3W	33		4.6	4.09	4.20	UNIMAK IS	1
11	15	18	16	45	20.1N	70.0W	50		3.7			N DOMINICAN REP	7
11	15	21	6	34	44.3N	149.0E	50	6.2	6.0	6.46	5.51	KURILE IS	19
11	16	1	17	6	44.7N	149.0E	33		4.4	3.43	4.10	KURILE IS	19
11	16	1	59	33	44.2N	149.2E	33		4.3			KURILE IS	19
11	16	2	30	7	44.3N	149.0E	50		5.0	5.18	4.76	KURILE IS	19
11	16	6	24	30	17.4S	167.7E	27					NEW HEBRIDES	14
11	16	6	40	37	7.0S	129.4E	125		4.7	4.31	4.33	BANDA SEA	24
11	16	6	46	16	41.3S	87.5W	11		5.3	5.84	5.24	OFF CHILE COAST	43
11	16	11	7	54	26.7N	97.2E	33		5.1	5.00	4.87	N BURMA	26
11	16	11	39	38	28.1N	95.1E	37		4.7	4.94	5.05	ASSAM INDIA	26
11	16	11	58	42	38.1N	117.0W	15		4.0			NEVADA	3
11	16	12	24	41	38.3N	117.1W	15					NEVADA	3
11	16	12	56	36	38.2N	117.1W	15			4.18	5.10	CENTRAL NEVADA	3
11	16	14	23	43	38.1N							NEVADA	3
11	16	14	44	38						3.06	3.90	LOCAL SHL 5.3	26
11	16	16	48	10	38.0N	117.1W	15		4.0			NEVADA	3
11	16	17	40	3	38.1N	117.1E	15					NEVADA	3
11	16	18	6	55	2.2S	80.0W	59		4.6	4.63	4.23	ECUADOR	8
11	16	19	17	56	38.0N	117.1W	15					NEVADA	3
11	16	22	43	26	22.3S	175.0W	33	5.7	5.6	6.29	5.31	TONGA IS	12
11	16	22	51	26	38.0N	117.0W	15		4.1			NEVADA	3
11	16	23	39	58	22.1S	175.3W	33		5.3	5.96	5.30	TONGA IS	12
11	17		48	3	7.6N	37.4W	33	6.0	5.9	6.54	5.46	N ATLANTIC OCEAN	32
11	17		48	57	22.2S	175.0W	33		5.3	5.45	4.53	TONGA IS REGION	12

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REF.
11	17	1	13	36	21.8S	175.0W	33		5.0	5.56	5.40	TONGA IS	12
11	17	2	32	49	38.0N	117.1W	15					NEVADA	3
11	17	3	10	44			33			3.69	3.80	LOCAL PMG 3.3	16
11	17	7	50	34	6.3N	126.2E	33	5.6	4.93	4.81		MINDANAO PI	22
11	17	10	27	16	20.9S	174.8W	33	4.2	4.91	4.60		TONGA IS	12
11	17	13	13	40	17.4S	178.5W	509	4.7	5.06	4.96		FUJI IS REGION	13
11	17	17	40	59	44.9N	149.5E	50	4.3				KURILE IS	19
11	17	20	7	32	7.1S	129.6E	137	4.1	3.79	3.92		BANDA SEA	24
11	17	22	51	14	45.2N	150.1E	20	4.1	4.50	4.60		KURILE IS	19
11	18		15	34	44.1N	151.1E	40	4.3	3.40	4.00		KURILE IS	19
11	18	1	1	53	3.6S	143.4E	33	5.2	5.22	5.76		NE NEW GUINEA	16
11	18	1	42	56	29.3N	57.0E	33	5.0	3.35	3.10		S IRAN	29
11	18	1	45	28	47.2N	148.5E	319	4.7	4.64	4.40		SEA OF OKHOTSK	46
11	18	5	16	42	8.4S	113.5E	104		4.61	4.50		S OF JAVA	24
11	18	6	4	13	22.4S	170.5E	33		4.52	4.45		LOYALTY IS	14
11	18	7	17	50	16.5S	74.5W	54	4.3	3.82	4.90		NEAR S PEROU COAST	6
11	18	7	38	5	43.0N	150.8E	33	4.2				KURILE IS	19
11	18	9	31	35	35.2N	120.4W	14	4.6	2.30	3.20		CALIF	2
11	18	12	12	43	35.5S	179.9W	50		5.41	5.05		KERMADEC IS	12
11	18	13	51	36	11.2S	173.3W	33	5.1	4.80	4.73		TONGA IS	12
11	18	14	38	20	29.9N	113.6W	14	5.5	5.7	5.97	5.28	GULF OF CALIFORNIA	4
11	18	16	2	20	29.7N	113.8W	14	4.7	4.53	4.75		GULF OF CALIFORNIA	4
11	18	19	7	48	29.1N	114.1W	14	4.6	3.98	4.80		BAJA CALIFORNIA	1
11	18	19	33	36	21.0N	113.7W	14	4.4				CALIF GULF	1
11	18	21	11	10	13.4S	166.6E	51	4.7	5.33	4.93		SANTA CRUZ IS	14
11	18	22	1	10	31.0N	113.3W	14	4.9	2.59	3.80		SONORA MEXICO	1
11	18		11	43	21.0N	113.7W	14	4.9	3.41	3.00		GULF OF CALIFORNIA	1
11	18		2	16	44.1N	150.2E	50	4.5	3.95	4.40		KURILE IS	19
11	18	4	37	57	39.7N	129.5E	537	4.4	5.34	5.24		OFF E KOREA COAST	12
11	18	8	6	33	59.7N	140.8W	33	4.2				YAKUTAI BAY ALASKA	1
11	18		8	12	30.9S	111.8W	14	5.2	5.0	5.02	4.15	GULF OF CALIFORNIA	1
11	18		10	44	27.5S	171.3E	16	5.0	5.31	5.05		LOYALTY IS REGION	14
11	18	10	51	14	30.5N	114.1W	14	4.3	3.62	4.15		CALIF GULF	1
11	18	11		54	44.4N	149.2E	33	5.8	6.25	5.49		KURILE IS	19
11	18	12	25	43	30.2S	60.8E	23	5.7	5.28	5.10		INDIAN OCEAN	1
11	18	14	25	27	44.4N	149.1E	33	4.4	3.43	4.10		KURILE IS	19
11	18	17	38	40	53.1N	159.6E	40	4.9	5.02	5.05		E KAMCHATKA COAST	19
11	18	18	17	2	5.0S	102.2E	17	5.4	5.48	5.29		OFF E SUMATRA COAST	1
11	18	22	36	58	18.6S	72.2W	33	4.4	3.79	4.40		OFF S PEROU COAST	1
11	20	1	13	49	53.4N	130.6W	39	4.0	3.65	3.50		QUEEN CHARLOTTE IS	1
11	20	2	6	49	46.0N	14.0E						YUGOSLAVIA	1
11	20		7	23	5.5S	148.2E	201	5.2	5.60	5.23		NEW BRITAIN	19
11	20	8	54	25	17.5S	172.8W	33	3.9	4.17	4.50		TONGA IS	12
11	20	11	59	58	22.2S	175.2W	33	5.6	5.73	5.03		TONGA IS	12
11	20	16	57	14	31.5N	131.6E	33	4.5	4.86	4.70		KYUSHU JAPAN	20
11	20	18	49	21	5.4N	126.2E	33	5.4	4.89	4.70		MINDANAO PI	1
11	20	19	48	43	48.0N	154.8E	33	4.6	5.33	4.70		KURILE IS	19
11	20	22	33	30	44.1N	149.1E	45	4.6	4.83	4.75		KURILE IS	19
11	21	5	54	55	17.9S	178.6W	595	4.3	5.33	5.00		FUJI IS	12
11	21	6	36	24	8.2S	117.8E	33		4.20	4.50		SUMBAWA	24
11	21	9	8	3	13.0S	178.4W	568	3.9	5.24	4.95		FUJI IS	12
11	21	9	53	35	41.2N	141.1E	57	4.2				N HONSHU COAST	19
11	21	10	20	4			33		3.82	4.00		LOCAL LPO 3.8	6
11	21	13	6	42	44.9N	151.9E	40	4.4	5.01	4.73		KURILE IS	19
11	21	14	22	10	47.6N	153.2E	60	4.7				KURILE IS	19
11	21	16	22	42	13.0N	144.2E	33	4.9	4.20	4.45		MARIANA IS	12
11	21	18	42	45	13.8S	14.5W	33	5.1	5.47	4.95		ASCENSION IS REGION	12
11	21	19	30	28	8.7S	119.2E	157		5.13	4.75		FLORES SEA	24
11	21	19	58	24	44.2N	149.6E	40	4.6	4.95	4.85		KURILE IS	19
11	21	20	23	12	11.1S	166.3E	149	4.7				SANTA CRUZ IS	14

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	21	21	1	35	50.3N	156.4E	80		5.3	5.61	5.12	S KAMCHATKA	19
11	22		18	36	5.9S	107.9E	323		5.1	5.51	5.02	NEAR N JAVA COAST	24
11	22	3	24	36	6.1S	154.3E	78		4.7	4.85	4.70	SOLOMON IS	15
11	22	11	14	3	18.5N	100.3W	120		4.7	4.37	4.23	GUERRERO MEXICO	4
11	22	12	40	10	18.8S	69.6W	120		4.6	3.10	3.90	CHILE-BOLIVIA BORDER	8
11	22	14	45	52	44.4N	149.0E	33		5.6	6.26	5.40	KAMCHATKA	19
11	22	15	22	11	44.5N	149.2E	40		4.5	4.23	4.30	KURILE IS	19
11	22	16	15	54	10.4N	94.0E	33		5.7	5.25	4.95	ANDAMAN IS REGION	24
11	22	17	3	39	17.9S	172.8W	33		5.2	5.40	5.03	TONGA IS REGION	12
11	22	18	57	2	21.0S	67.9W	87		4.8	5.08	4.96	W BOLIVIA	8
11	22	20	10	40	63.4N	150.0W	156		4.1			C ALASKA	1
11	22	20	26		37.3N	30.1E	28		4.4	4.44	4.28	SW TURKEY	30
11	22	21	41	31	37.5N	30.0E	20		5.1	4.38	4.52	SW TURKEY	30
11	23	1	49	22	44.3N	148.9E	45		4.4	4.45	4.45	KURILE IS	19
11	23	4	58	52	15.0S	167.3E	116		4.3	4.88	4.47	NEW HEBRIDES	14
11	23	7	50	46	30.1N	114.0W	14	6.0	5.1	5.78	5.28	GULF OF CALIFORNIA	3
11	23	8	17	17	30.0N	113.7W	14		4.6	4.22	5.20	GULF OF CALIFORNIA	4
11	23	8	32	31	29.9N	114.0W	14		5.3	5.24	5.20	GULF OF CALIFORNIA	4
11	23	8	47	17	29.7N	114.3W	14		4.7	4.36	4.70	BAJA CALIFORNIA	4
11	23	10	20	10	30.0N	113.7W	14		4.1			CALIF GULF	4
11	23	10	53	18	30.4N	113.5W	14		4.3			CALIF GULF	4
11	23	18	8	16	16.7S	70.6W	123		3.9	4.05	5.00	S PERU	8
11	23	19		36	45.1N	151.5E	45		4.6	5.73	5.17	KURILE IS	19
11	23	17	30	19	20.2S	178.1W	515		4.7	5.27	5.08	FIJI IS	12
11	23	22	33	56	79.9N	.9W	30		4.3	5.00	4.80	SVALBARD REGION	40
11	23	23	13	29	52.3N	173.4W	45		4.5			ANDREANOF IS	1
11	24	1	41	41	17.1S	173.2W	33		4.1	4.62	4.50	TONGA IS	12
11	24	3	58	33	2.9S	128.8E	42		5.5	5.05	4.75	CERAM SEA	23
11	24	5	8	43	22.1S	175.6W	33		5.1	5.35	5.07	TONGA IS	12
11	24	5	13	24	21.9S	175.8W	33		5.0	5.50	4.86	TONGA IS	12
11	24	5	20	45	21.7S	175.1W	35		4.6	5.04	5.15	TONGA IS	12
11	24	6	16	7	21.9S	176.8W	33		4.5	4.68	4.80	FIJI IS	12
11	24	11	5	57	28.2N	140.1E	260		5.2	5.15	4.95	S OF HONSHU JAPAN	18
11	24	11	53	56	48.1N	148.0E	40		4.4			KURILE IS	19
11	24	15	31	29	6.1S	147.6E	75		4.6	4.25	4.57	NE COAST NEW GUINEA	16
11	24	16	49	31	11.4N	73.8W	111		4.1	4.85	4.70	N COLOMBIA	7
11	24	17	48	47	61.8N	149.5W	36		4.3	4.59	4.10	CENTRAL ALASKA	42
11	24	17	56	2	44.3N	149.3E	50		4.6	5.32	4.90	KURILE IS	19
11	24	18	7	7	46.4N	150.0E	40		4.9	5.80	5.22	KURILE IS	19
11	24	19	23	14	45.6N	151.6E	33		4.2	4.86	4.70	KURILE IS	19
11	24	22	58	17	56.1S	27.5W	33		5.6	6.14	5.62	SANDWICH IS	10
11	25		51	2	16.3S	174.6W	196		4.4	4.76	4.65	SAMOA IS REGION	12
11	25	3	49	13	44.8N	149.4E	40		4.3			KURILE IS	19
11	25	6	43	24	45.4N	151.4E	50		4.8	5.69	5.30	KURILE IS	19
11	25	6	50	7	6.7N	73.3W	167		4.2	4.36	4.40	COLOMBIA	7
11	25	8	54	6	45.0N	149.2E	23		4.6	4.59	4.55	KURILE IS	19
11	25	10	2	24	44.3N	149.5E	55		4.9	5.43	5.06	KURILE IS	19
11	25	10	11	5	44.1N	149.9E	45		4.8	5.38	5.12	KURILE IS	19
11	25	11	30	33	45.4N	151.7E	50		4.5	5.14	5.00	KURILE IS	19
11	25	16	46	36	22.6N	121.3E	23		4.7	4.81	4.58	NEAR E FORMOSA COAST	21
11	25	17	53	37	6.8N	73.0W	160		4.0			COLOMBIA	7
11	26	2	58	35	26.9S	176.5W	46		4.2	5.50	4.96	KERMADEC IS	12
11	26	6	52	8	6.8S	120.6E	111		5.1	5.66	4.95	BANDA SEA	23
11	26	8	47	17	7.1S	120.2E	117		4.7	4.38	4.55	BANDA SEA	24
11	26	9	7	3	16.7S	67.2W	276		4.0			BOLIVIA	8
11	26	16	19	49	34.9N	27.4E	33		4.5	3.87	4.30	CRETE REGION	30
11	26	18		33	32.5S	71.2W	140		4.2	3.92	4.50	S CHILE	8
11	26	20	1	8	7.5S	155.5E	33		4.6	3.93	4.60	SOLOMON IS REGION	15
11	26	22	50	7	16.6S	175.2W	33		5.3	5.92	5.30	FIJI IS REGION	12
11	27	2	19	42	16.6S	72.1W	79		4.9	4.87	4.67	S PERU	8

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
11	27	7	41	1	23.3S	65.8W	164		4.5	4.15	4.25	N ARGENTINA	8
11	27	7	55	17	42.0N	76.5E	33		4.66	4.50		KAZAKH SSR	27
11	27	9	21	58	46.6N	152.6E	45		4.4	5.42	4.90	KURILE IS	19
11	27	9	40	41	7.2N	73.3W	114		4.0			COLOMBIA	7
11	27	13	13	11	7.5S	127.7E	33		4.4	4.10	4.30	BANDA SEA	24
11	27	13	58	58	3.1N	126.6E	33		4.8	5.14	4.96	MOLUCCA PASSAGL	23
11	27	20	18	1	45.8N	151.8E	40		4.4	5.36	5.10	KURILE IS	19
11	27	21	10	40	30.8N	79.1E	33		5.1	4.88	4.81	N INDIA	26
11	28	2	44	36	19.1N	69.4W	48		4.3	4.77	4.80	N DOMINICAN REPUBLIC	7
11	28	3	14	2	44.3N	114.8W	33		3.5			IDAHO	34
11	28	3	19		19.1N	69.5W	33		4.1			DOMINICAN REP	7
11	28	5	11	48	44.9N	148.9E	45		4.4	4.63	4.50	KURILE IS	19
11	28	8	28	20	12.0S	167.5E	259		4.6	4.70	4.50	SANTA CRUZ IS	14
11	28	8	41	31	10.9N	41.4W	33		4.7	5.60	5.20	N ATLANTIC OCEAN	32
11	28	11	16	21	8.3N	124.5E	57		5.8	4.89	4.76	NEAR W HINDIAO COAST	22
11	28	13	5	23	45.3N	150.0E	33		4.3	4.65	4.50	KURILE IS	19
11	28	15	7	51	12.1S	166.1E	33		4.5	5.03	4.88	SANTA CRUZ IS	14
11	28	15	13	11	52.2N	174.2E	33		5.4	6.18	5.56	NEAR IS	1
11	28	18	14	17	24.4S	179.1E	593		4.0	5.45	5.00	KERMADEC IS REGION	12
11	28	19	26	26	12.2S	165.9E	25		4.1	4.42	4.62	SANTA CRUZ IS	13
11	28	19	57	57	7.1S	129.4E	113		4.6	4.48	4.41	BANDA SEA	24
11	28	23	18	20	43.6N	150.6E	33		4.4	4.10	4.50	KURILE IS	19
11	29	1	58	45	15.1S	73.7W	124		4.7	4.34	4.50	S PERU	8
11	29	3	56	20	44.7N	147.0E	133		4.1			KURILE IS	19
11	29	8	48	57	39.1N	118.2W	33		3.7			NEVADA	3
11	29	10	21	53	12.2S	166.0E	54		4.3	4.57	4.60	SANTA CRUZ IS	13
11	29	12	28	52			33			3.13	3.80	LOCAL SHI 2.2	29
11	29	14	9	11	44.6N	149.8E	50		4.6	4.39	4.50	KURILE IS	19
11	29	14	49	27	23.7N	143.2E	33		5.2	5.37	5.09	IONIN IS REGION	18
11	29	15	14	39	42.5N	13.3E	33		4.2			ITALY	31
11	29	18	33	23	5.3S	151.6E	58		5.0	4.62	4.43	NEW BRITAIN	15
11	29	18	55	24	17.3S	178.4W	528		4.4	4.66	4.55	FIJI IS	13
11	29	19	46	17	44.1N	149.5E	50		4.5	4.42	4.56	KURILE IS	19
11	29	20	49	34	36.3N	122.2W	14		4.5	3.43	3.90	MONTREY CO CALIF	3
11	29	22	21	49	49.0N	148.3E	33		4.1			KURILE IS	19
11	29	23	58	56	17.9S	178.8W	608		4.4	4.91	4.80	FIJI IS	13
11	30	9	47	59	1.6N	128.4E	61		5.5	5.63	5.20	MALMAHERA REGION	23
11	30	11	29	46	51.9N	174.2E	33		4.2	4.08	3.80	NEAR IS	1
11	30	18	24	29	45.2N	150.4E	50		4.3	4.33	4.45	KURILE IS	19
11	30	20	44	27	46.1N	150.9E	33		4.5	5.17	4.85	KURILE IS	19
11	30	21	40	20	6.6N	74.2E	33		5.3	5.49	5.11	NICOBAR IS	24

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	1			42			33			4.36	5.20	LOCAL PMG 3.7	16
12	1	4	26	13	56.1N	111.8E	33		5.3	5.30	4.94	LAKE BAIKAL REGION	28
12	1	7	46	55	3.9S	146.3E	33		5.6	4.55	4.73	BISMARCK SEA	16
12	1	8	50	42	38.2S	73.9W	55		4.4	4.61	4.50	CENTRAL CHILE COAST	8
12	1	9	34	56	7.4N	93.5E	27			3.99	4.00	NICOBAR IS	24
12	1	11	52	53	4.6S	154.8E	479		4.6	4.82	4.75	SOLOMON IS	15
12	1	13	33	56	45.3N	150.7E	35		4.3	5.51	5.00	KURILE IS	19
12	1	15	50	31	45.9N	152.5E	33		4.1	4.06	4.50	KURILE IS	19
12	1	15	57	12	44.5N	150.7E	40		4.4	4.36	4.60	KURILE IS	19
12	1	16	6	15	21.2S	68.4W	61		4.5	4.52	4.10	N CHIEL	8
12	1	16	15	1	28.9N	130.0E	31		4.8	5.04	5.05	RYUKYU IS	20
12	1	16	44	12	11.6S	167.0E	33		4.5	4.21	4.00	SANTA CRUZ IS	14
12	1	17	34	58	44.6N	150.7E	40		4.1			KURILE IS	19



MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	1	17	44	33	44.9N	150.3E	40		4.4	4.67	4.70	KURILE IS	19
12	1	19	6	14	20.7S	68.0W	33		4.3	2.82	4.30	CHILE BOLIVIA	8
12	2		24	3	15.3S	173.7W	348		4.0	3.64	3.50	SAMOA IS	12
12	2	5	16	42	54.9N	159.1E	110		3.9	4.20	4.50	KAMCHATKA	19
12	2	6	3	57	45.0N	5.7E						FRANCE	36
12	2	6	49	9	47.9N	16.5E	43		4.5	4.76	5.10	AUSTRIA	36
12	2	6	52	20	54.0N	134.5W	33		3.6	4.17	3.20	QUEEN CHARLOTTE IS	2
12	2	9	46	37	48.0N	145.2E	448		4.1	3.96	4.00	SEA OF OKHOTSK	46
12	2	11	45	38	48.1N	154.7E	50		4.5	5.03	4.90	KURILE IS	19
12	2	13	37	25	44.4S	15.6W	33		5.8	5.83	5.03	TRISTAN DA CUNHA IS	32
12	2	15	37	38	1.4N	84.6W	33		4.3	4.39	4.65	ECUADOR COAST	8
12	2	17	32	28	24.8S	179.7E	550		3.9	4.18	4.10	FIJI IS REGION	12
12	2	20	55	59	80.1N	.6W	33			5.40	4.84	SVALBARD REGION	40
12	2	23	52	38	51.5N	174.0W	55		4.9	5.31	4.99	ANDREANOF IS	1
12	3	3	44	39	45.4N	151.6E	45		4.3	5.41	5.20	KURILE IS	19
12	3	4	17	58	4.2S	102.9E	50		5.2	5.14	4.95	NEAR S SUMATRA COAST	24
12	3	4	35	54	38.2S	69.0W	65		4.1	3.65	3.75	ARGENTINA	8
12	3	5	9	22	46.2N	153.0E	40		5.1	5.23	4.81	KURILE IS	19
12	3	7	13	38	6.2S	147.6E	97		5.2	5.09	5.17	NL NW GUINEA	16
12	3	7	21	10	12.6N	144.3E	45		4.6	4.37	3.80	MARIANA IS	18
12	3	8	39	7	46.1N	152.9E	45		4.7	5.04	4.76	KURILE IS	19
12	3	11	33	33			33			3.11	3.20	LOCAL GSC 3.5	3
12	3	12	16	16	15.2S	173.2W	33		4.5	4.64	4.80	TONGA IS	12
12	3	12	23	54	18.1N	105.2W	33		4.0			MEXICO COAST	5
12	3	13	27	31	45.7N	153.3E	45		4.4			KURILE IS	19
12	3	13	43	7	11.3S	167.4E	51		4.3	3.91	4.13	SANTA CRUZ IS	13
12	3	14	33	38	18.5S	177.8W	615		3.9	4.67	4.60	FIJI IS REGION	12
12	3	17	12	2	2.2N	84.5W	56		5.2	5.48	5.56	OFF ECUADOR COAST	6
12	3	21	15	10	12.2S	166.0E	32	6.0	5.1	5.50	5.00	SANTA CRUZ IS	13
12	3	21	30	6	12.0S	166.0E	40		4.8	5.19	4.81	SANTA CRUZ IS	13
12	3	23	3	42	22.4S	69.3W	18	6.2	6.1	6.72	5.20	N CHILE	8
12	4		13	22	12.1S	166.1E	39		4.1	4.55	4.57	SANTA CRUZ IS	13
12	4		44	37	34.0S	179.3W	33		4.8	5.39	5.01	KERMADEC IS	12
12	4	1	27	34	46.2N	153.1E	20		5.2	5.50	4.91	KURILE IS	19
12	4	1	35	25	45.3N	153.4E	60		4.1			KURILE IS	19
12	4	2	30	18	31.3N	55.4E	46			3.82	4.10	IRAN	29
12	4	2	43	30	45.9N	153.2E	50		4.8	5.34	4.93	KURILE IS	19
12	4	2	53	42	4.8S	130.1E	33			4.76	4.76	CERAM REGION	23
12	4	3	13	7	8.3S	83.1W	33		4.6	4.52	4.95	OFF PERU COAST	8
12	4	3	21	8	19.5N	108.1W	33		3.8	3.51	3.50	REVILLA GIGEDO IS	5
12	4	4	18	46	19.5N	108.3W	33		4.8	5.27	4.80	REVILLA GIGEDO IS	5
12	4	4	21	23	7.1S	80.4W	45		4.4	4.50	4.86	NEAR N PERU COAST	8
12	4	6	45	45	45.9N	152.2E	45		3.9	4.96	4.70	KURILE IS	19
12	4	7	19	23	45.0N	5.6E						FRANCE	36
12	4	8	24	17	46.1N	152.9E	33		5.3	5.58	5.16	KURILE IS	19
12	4	9	34	50	17.9S	178.4W	574		4.1	5.48	5.10	FIJI IS REGION	12
12	4	10	23	22	25.7N	46.3W	33		4.1			N ATLANTIC	32
12	4	15	44	53	46.0N	153.2E	40		4.9	5.43	5.05	KURILE IS REGION	19
12	4	15	49	47	46.6N	153.3E	33		4.1	4.29	4.35	KURILE IS	19
12	4	15	59	42	35.5S	102.8W	33	6.0	4.6	5.22	4.82	LASTER IS	43
12	4	21	32	35	43.6N	71.6W	33		3.7		3.60	NEW HAMPSHIRE	34
12	5	4	7	43	17.3N	80.1E	33					S INDIA	27
12	5	4	23	22	35.7S	103.1W	33		4.8	5.07	4.75	EASTER IS	43
12	5	6	51	3	37.2N	87.0W	33			2.55	3.70	W KENTUCKY	34
12	5	11	29	49	7.4N	77.3W	33		4.7	5.06	4.64	COLOMBIA	6
12	5	13	4	27	12.2N	143.9E	33		4.5	4.04	4.15	MARIANA IS	18
12	5	15	45	17	46.7N	151.0E	65		3.9	3.23	3.90	KURILE IS	19
12	5	16	41	45	60.5N	147.4W	33		3.5			KENAI ALASKA	1
12	5	20	7	46	52.2N	171.1E	50		4.6	5.32	4.60	NEAR IS	1
12	5	22	40	5	8.8S	131.1E	163		4.5	3.03	3.90	ARAFARU SEA	23

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	5	23	28	57	12.8N	143.5E	94		4.8	4.44	4.70	MARIANA IS	18
12	5		56	3	18.0S	176.9W	33		4.1			FIJI IS	12
12	6	1	56	43	5.8S	150.3E	61		5.3	5.59	5.35	NEW BRITAIN	15
12	6	3	16	20	43.8N	134.9E	335		3.8	4.53	4.50	SIKHOTA ALIN USSR	46
12	6	4	12	49	25.6S	68.6W	105		4.4	4.75	4.55	N CHILE	8
12	6	5	17	10	44.7N	150.2E	60		4.1			KURILE IS	19
12	6	5	29	1			32			3.29	4.60	LOCAL PMG 4.0	16
12	6	6	51	58	46.5N	152.6E	50		4.4	5.04	4.60	KURILE IS	19
12	6	8	34	24	37.5N	118.5W	15	5.1	4.3	3.51	4.23	MONC CO CALIF	3
12	6	10	56	26			33			3.98	4.60	LOCAL PMG 4.6	16
12	6	13	54	21	36.4N	118.2W	15		4.1			CALIF	3
12	6	14	16	39			33			4.95	5.60	LOCAL PMG 5.1	15
12	6	18	14	32	7.1S	80.5W	33		4.4	4.15	4.46	PERU COAST	8
12	6	22	7	30	45.5N	152.4E	20		4.3	3.42	4.10	KURILE IS	19
12	7	4	7	53	22.1S	179.4W	546		5.5	5.93	5.07	FIJI IS REGION	12
12	7	4	46	52	18.8S	169.2E	227		4.7	5.54	5.13	NEW HEBRIDES	14
12	7	5	7	43	21.0S	178.6W	560		3.8	4.20	4.30	FIJI IS REGION	12
12	7	6	47	47	44.9N	149.0E	33		4.6	4.75	4.65	KURILE IS	19
12	7	6	53	18	45.1N	149.8E	40		4.3			KURILE IS	19
12	7	9	6	41	30.9N	51.3E	64			4.72	4.15	S IRAN	29
12	7	10	17	20	45.0N	5.7E						FRANCE	36
12	7	10	32	40	20.8S	174.0E	33		4.6	4.81	4.73	FIJI IS REGION	14
12	7	12	38	18	45.0N	5.6E						FRANCE	36
12	7	11	25	54	45.8N	153.0E	55		4.1	4.41	4.70	KURILE IS	19
12	7	12	53	6						3.02	4.40	LOCAL BAG 2.2	22
12	7	15	17	57	12.3N	143.9E	33		5.1	4.64	4.62	MARIANA IS REGION	18
12	7	17	37	26	29.3S	178.5W	209		4.7	5.22	5.00	KERMADEC IS	12
12	8	7	53	15	46.4N	153.0E	20		5.2	5.35	4.88	KURILE IS	19
12	8	10	49	19	11.9S	166.0E	44		4.2	4.53	4.55	SANTA CRUZ IS	13
12	8	11	8	5	39.9N	58.7E	33		4.5	5.28	4.90	TURKMEN SSR	25
12	8	12	8	49	35.5N	143.3E	32		4.0			E HONSHU COAST	19
12	8	15	18	10	36.5N	70.8E	212					HINDU KUSH	48
12	8	20	31	46	45.3N	151.3E	40		4.4	5.49	4.95	KURILE IS	17
12	8	20	39	39	45.3N	151.2E	50		4.3	6.20	5.50	KURILE IS	17
12	8	1	45	19	43.6N	110.2W	45		4.0	1.47	3.40	WYOMING	34
12	9	2	24	9	45.6N	151.4E	55		4.3	6.06	5.40	KURILE IS	17
12	9	5	38	30	54.7N	159.4W	45		5.1	5.27	4.86	ALASKA PENINSULA	1
12	9	5	39	26	44.9N	110.3W	33		3.7		3.10	YELLOWSTONE PARK	34
12	9	8	33	58	44.0N	150.4E	50		4.7	4.87	4.70	KURILE IS	19
12	9	10	53	37	21.1S	178.0W	435		5.0	5.45	4.82	FIJI IS REGION	12
12	9	11	22	27	7.6N	126.8E	139		4.5	4.52	4.50	NEAR E MINDANAO COAST	22
12	9	12	22	42	45.2N	151.2E	50		4.7	5.41	4.90	KURILE IS	19
12	9	12	29	2	45.3N	151.2E	45		4.4	5.98	5.30	KURILE IS	19
12	9	13	58	21			32			4.12	5.10	LOCAL ARL 6.6	8
12	9	18	1	55	36.1N	71.2E	157		5.0	4.43	4.33	HINDU KUSH	48
12	9	19	17	50	25.2S	179.5E	533		4.5	4.74	4.60	FIJI IS REGION	12
12	9	21	8	17	43.7N	150.7E	50		4.3			KURILE IS	19
12	9	21	9	56	11.4S	166.4E	167		4.4	4.17	4.38	SANTA CRUZ IS	14
12	10		56	51	34.8N	134.7E	249		4.1			HONSHU JAPAN	20
12	10	2	32	5	5.4N	82.5W	35		4.2	3.64	3.70	S OF PANAMA	6
12	10	3	31	21	6.2S	128.1E	366		5.6	6.17	5.27	BANDA SEA	23
12	10	5	52	31	7.0N	73.1W	142		3.9			COLOMBIA	7
12	10	6	30	55	58.1S	26.4W	110			6.38	5.52	SANDWICH IS	10
12	10	7	26	36	8.7S	79.8W	32		4.5	3.41	4.60	PERU COAST	8
12	10	9	28	39	45.8N	151.7E	50		4.7	5.01	4.70	KURILE IS	19
12	10	10	19	52	43.0N	14.0E						ITALY	31
12	10	13	8	9	7.2N	125.1E	33		4.7	4.78	4.75	E MINDANAO COAST	22
12	10	13	37	59			33			4.05	5.00	LOCAL ANT 7.7	8
12	10	14	42	11	7.1S	155.5E	88		4.6	4.28	4.62	SOLOMON IS	15
12	10	14	49	43	18.1S	68.5W	79		5.3	5.76	5.12	W BOLIVIA	8

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	10	15	39	49	21.3S	174.4E	33		4.5	5.35	4.80	LOYALTY IS REGION	14
12	10	17	27	2	36.3N	137.1E	247		4.1	3.63	4.20	W HONSHU COAST	20
12	10	20	3	13	17.1N	60.4W	33		4.5	5.05	4.82	LEEWARD IS	7
12	10	22	26	10	34.1N	116.7W	14					CALIF	3
12	11		47	48	15.1S	173.5W	33		5.6	5.85	5.10	TONGA IS	12
12	11	2	31	19	17.8S	178.6W	537		4.9	6.08	5.39	FIJI IS	12
12	11	3	54	40	7.2S	125.5E	145		5.3	5.23	4.70	BANDA SEA	24
12	11	6	6	45	19.6N	145.7E	110		4.5	4.19	4.30	MARIANA IS	18
12	11	8	37	48			33			3.21	4.60	LOCAL ANT 2.8	8
12	11	9	12	15	45.3N	150.1E	43		4.5	5.22	5.00	KURILE IS	19
12	11	9	22	36	32.1N	130.2E	170		4.2	3.54	4.45	NEAR W KYUSHU COAST	20
12	11	10	2	2	8.0N	126.1E	33			4.77	4.30	E MINDANAO COAST	22
12	11	11	12	30	24.2S	179.3E	540		4.7	4.90	4.65	FIJI IS	12
12	11	17	8	12	51.2N	179.3W	32		5.3	5.54	5.04	ANDREANOF IS	1
12	11	17	12	45	51.1N	179.4W	33		4.7	5.19	4.90	ANDREANOF IS	1
12	11	17	25	12	51.3N	179.5W	33		4.9	5.50	5.20	ANDREANOF IS	1
12	11	17	43	17	51.0N	179.3W	33		4.5			ANDREANOF IS	1
12	11	18	9	17	51.0N	179.7W	33		4.6	5.56	5.40	ANDREANOF IS	1
12	11	18	28	48	51.3N	179.2W	33		4.7	4.78	4.60	ANDREANOF IS	1
12	11	19	13		51.3N	179.5W	54		4.7	5.32	5.13	ANDREANOF IS	1
12	11	19	28	3	51.3N	179.4W	33		4.8			ANDREANOF IS	1
12	11	20	25	14	51.3N	179.4W	33		4.6	4.66	4.50	ANDREANOF IS	1
12	12		38	25	18.7N	107.0W	33		4.5	4.36	4.06	JALISCO MEXICO COAST	5
12	12	4	12	56	8.3S	128.5E	179		4.7	4.22	4.16	TIMOR IS	24
12	12	9	47	2	22.8S	178.9W	33		4.2			FIJI IS	12
12	12	14	4	3	46.0N	149.9E	33		4.1			KURILE IS	19
12	12	14	24	57	45.0N	5.6E						FRANCE	36
12	12	15	2	48	4.5N	97.2E	33			4.90	4.62	N SUMATRA	24
12	12	17	4	46	11.1S	163.0E	33		4.7	3.71	4.00	SOLOMON IS REGION	15
12	12	17	23	54	45.0N	5.6E						FRANCE	36
12	12	17	59	23	32.4S	69.0W	51		4.4	4.71	4.80	SAN JUAN ARGENTINA	8
12	12	19	33	29			33			3.78	4.90	LOCAL PMG 4.2	16
12	12	20	54	35	5.7N	73.1W	140		4.9	4.85	5.09	COLOMBIA	7
12	12	22	26	42	19.8S	174.1W	33		4.4	4.04	4.05	TONGA IS	12
12	12	23	24	37	46.3N	150.5E	90		5.2	5.34	4.97	KURILE IS	19
12	13	2	47	14	25.9N	126.1E	109		4.6	4.81	4.76	RYUKYU IS	20
12	13	4	16	13	2.7S	78.4W	109		4.5	4.35	4.60	EQUADOR	8
12	13	5	28	7	6.9S	77.1W	33		4.0	3.92	5.00	N COLOMBIA	6
12	13	6	54	46	15.9S	168.2E	33		4.0	3.86	4.10	NW HEBRIDES IS	14
12	13	12	15	20	56.2N	159.0W	149		4.7			ALASKA PENINSULA	1
12	13	16	12	36	14.5S	167.5E	159		3.5			NEW HEBRIDES IS	14
12	13	19	57	27	14.5N	91.9W	139		4.0			GUATEMALA	5
12	13	21	10	21	3.5S	140.1E	44		5.8	4.54	4.50	W NEW GUINEA	16
12	13	22	20	19	44.3N	149.1E	40		4.4	4.29	4.45	KURILE IS	19
12	14		5	40	2.3S	61.2W	36		4.8	4.50	4.65	N BRAZIL	8
12	14	1	45	14	17.9S	178.3W	550		4.3	5.02	5.20	FIJI IS REGION	12
12	14	1	56	8			33			3.94	5.00	LOCAL PMG 6.7	16
12	14	1	56	10	5.2S	151.7E	54		4.9			NEW BRITAIN	19
12	14	3	44	1	45.4N	150.1E	33		4.6	4.69	4.90	KURILE IS	19
12	14	5	7	41	13.8S	169.7E	614		4.4	5.02	4.85	NEW HEBRIDES IS	14
12	14	6	49	35	44.5N	151.7E	45		4.5			KURILE IS	19
12	14	7	35	22	2.8S	140.8E	33			3.51	4.20	N NEW GUINEA COAST	16
12	14	7	51	8	62.7N	149.5W	95		5.1	4.89	4.67	CENTRAL ALASKA	1
12	14	10	26	47	5.0N	82.6W	33		4.5	4.58	4.90	S OF PANAMA	6
12	14	11	42	50	5.4S	152.3E	43		5.1	3.61	4.53	NEW BRITAIN	19
12	14	12	55	9	43.6N	110.3W	33		4.1	2.56	4.10	WYOMING	34
12	14	15	6	5	7.1S	155.7E	95		4.5	3.93	4.39	SOLOMON IS	19
12	14	17	34	1	41.7N	139.4E	33		3.9	4.17	4.50	NEAR S HOKKAIDO COAST	19
12	14	18	46	38	44.5N	114.8W	33		3.9			IDAHO	34
12	14	19	13	53	22.8S	70.5W	48		4.5	4.02	4.55	N CHILE COAST	8

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	M. S.	MTOT	M. S.	LOCATION
12	14	23	2	48	44.7N	149.1E	33	4.0				KURILE IS
12	15		5	1	18.3S	178.5W	638	3.4	4.31	4.35		FIJI IS
12	15	3	20	18	44.7N	149.5E	15	4.0				KURILE IS
12	15	3	39	49	52.6N	169.3W	26	3.9	3.85	4.30		FOX IS
12	15	5	37	14	18.1S	178.0W	650	3.6	4.90	4.70		FIJI IS
12	15	7	2	36	28.6N	129.9E	33	4.8	4.93	4.80		RYUKYU IS
12	15	7	33	20	34.3N	88.8E	33	4.8	4.00	4.26		TIBET
12	15	10	27	54	44.1N	149.2E	45	4.1				KURILE IS
12	15	11	36	24	39.1N	114.3W	33	3.5				NEVADA
12	15	13	12	15	44.3N	150.3E	45	4.2				KURILE IS
12	15	15	5	18	4.7S	102.9E	72	5.7	4.79	4.68		NEAR SUMATRA COAST
12	15	15	44	22	51.0N	128.8W	33	4.0	3.60	3.60		VANCOUVER IS REEF
12	15	16	54	24	16.3N	97.7W	35	4.2	4.43	4.56		JAXACA MEXICO
12	15	17	32	37	9.4S	124.1E	33	4.5	5.25	4.74		TIMOR IS REGION
12	15	19	24	12	10.9S	164.2E	33	4.2	4.26	3.90		SOLOMON IS REGION
12	15	19	34	46	4.8S	108.0E	650	6.4	7.13	5.66		JAVA SEA
12	15		27	24	17.4S	167.0E	33					NEW HEBRIDES IS
12	16	1	51	31	5.4S	101.5E	64	6.0	6.16	5.46		TONGA STRAIT
12	16	2	5	38	6.7S	101.5E	33		5.64	5.30		NEAR W SUMATRA COAST
12	16	2	44	35	4.2S	105.8E	56	5.0	5.05	4.95		NEAR W SUMATRA COAST
12	16	4	14	43	5.3S	105.5E	63	5.8	4.76	4.96		W SUMATRA COAST
12	16	5	8	14	5.3S	103.8E	33	5.0	4.77	4.83		OFF W SUMATRA COAST
12	16	5	17	14	17.1N	147.7E	48	4.6	4.61	4.40		MARIANA ISLANDS
12	16	6	27	20	12.2N	84.4W	34	4.3	4.60	4.30		EL SALVADOR
12	16	6	27	24	17.4S	167.0E	33		4.28	4.40		NEW HEBRIDES IS
12	16	10	43	53	13.9N	10.9W	57	4.3				GUATEMALA
12	16	11	3	20	45.8N	142.6E	258	4.8	4.75	4.65		S. SARHALIA
12	16	12	47	56	37.1N	20.9E	15	5.6	5.72	5.21		IONIAN SEA
12	16	14	18	5	49.1S	127.1E	33	5.3	5.72	4.80		S OF AUSTRALIA
12	16	15	18	35	15.2S	173.7W	33	4.8	5.45	4.80		SAMOA IS
12	16	16	6	35	6.5S	109.3E	46	6.0	5.04	4.80		TONGA STRAIT
12	16	16	41	9	1.6S	78.0W	170	4.8	4.72	4.74		ECUADOR
12	17	4	12	39	22.2N	144.4E	151	4.4	4.46	4.70		VOLCANO IS REGION
12	17	8	33	23	33.4S	178.5W	383	4.0	3.88	3.90		ARMADIL IS
12	17	10	19	10	6.5S	146.8E	33	4.8	4.80	4.96		E NEW GUINEA
12	17	10	58	12	36.7N	71.2E	293	4.2	4.47	4.50		HINDU KUSH
12	17	12	52	31	45.6N	151.7E	33	3.7	5.15	4.70		KURILE IS
12	17	17	31	40	45.0N	5.5E						FRANCE
12	17	23	22	11	52.9N	165.4W	33	4.9	5.31	4.95		FOX IS
12	18		30	3	24.8S	176.5W	46	6.5	7.41	5.92		TONGA IS
12	18	1	42	14	7.4S	76.0W	33	4.0				PERU
12	18	2	50	31	45.5N	151.3E	33	5.2	5.71	5.24		KURILE IS
12	18	3	9	5	45.8N	151.7E	45	4.4	3.37	4.00		KURILE IS
12	18	3	12	13			33		3.85	4.90		LOCAL ANT 4.9
12	18	6	38	30	18.7S	179.1W	300	4.8	4.62	4.55		FIJI IS
12	18	6	40	6	41.7N	82.5E	33	5.2	4.46	4.94		SINKIANG CHINA
12	18	10	6	51	43.7N	126.9W	33	4.2	2.77	4.20		OREGON COAST
12	18	12	21	50	29.9S	177.2W	130	3.8	4.77	4.53		ARMADIL IS
12	18	18	13	16	37.2N	140.7E	59	4.2	4.40	4.70		E MONSIE COAST
12	18	19	30	6	46.2N	151.5E	33	4.3	4.47	4.70		KURILE IS
12	19	1	47	34	39.0S	70.4W	33	4.3	3.78	3.80		ARGENTINA
12	19	4	34	52	33.1S	68.7W	45	4.5	4.14	3.80		ARGENTINA
12	19	8	24	17	24.9S	179.7W	33	4.4	5.47	5.10		S OF FIJI IS
12	19	14	54	44	8.7S	80.8W	33	4.3				PERU COAST
12	19	17	4	8	9.7S	79.1W	56	5.1	5.97	5.30		NEAR C PERU COAST
12	19	18	43	38	35.6N	25.7E	33	4.8	4.10	4.70		NEAR N KURILE COAST
12	19	20	33	50	35.2S	68.0W	32	5.3	5.43	5.11		ARGENTINA
12	19	22	35		52.0N	170.8W	33	4.4	5.09	4.60		FOX IS
12	20		23	50	8.6S	160.4E	69	5.5	5.56	5.16		SOLOMON IS
12	20		47	18	45.5N	151.8E	40	4.2				KURILE IS

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	20		58	13	3.4S	128.8E	82		5.0			BANDA SEA	24
12	20	4	9	15	45.0N	147.4E	50		5.1	4.92	4.65	KURILE IS	19
12	20	4	20	13	6.9S	129.5E	58		4.4	4.08	4.22	BANDA SEA	24
12	20	4	52	33	14.8S	173.4W	33		4.9	4.08	3.80	SAMOA IS REGION	12
12	20	8	57	18	7.0S	129.3E	103		5.5	5.23	4.92	BANDA SEA	24
12	20	10	48	4	5.2S	80.8W	55		5.2	5.64	5.08	NEAR N PERU COAST	8
12	20	13		51	44.9N	111.7W	33		4.3	2.79	4.27	HEBGEN LAKE	34
12	20	15	49	45	12.8S	66.0E	33		5.6	5.65	5.02	INDIAN OCEAN	33
12	20	16	24	5	12.7S	66.3E	33			5.57	5.20	INDIAN OCEAN	33
12	20	16	46	14	12.6S	66.4E	33		4.9	4.89	4.83	INDIAN OCEAN	33
12	20	17	29	49	51.8N	177.7W	33		4.4			ANDREANOF IS	1
12	20	21	11	53	20.3S	174.8W	33		4.1	5.67	4.80	TONGA IS	12
12	20	21	48	47	31.6N	141.8E	33		4.2			S HONSHU	18
12	20	22	2	7	43.6N	5.6E						FRANCE	36
12	20	22	28	31	13.2N	88.0W	64		4.3			EL SALVADOR COAST	6
12	21	4	13	13	18.0S	178.3W	595		4.3	4.83	4.70	FIJI IS	12
12	20	23	21	45	46.8N	9.2E						SWITZERLAND	36
12	21		29	30	7.3S	155.1E	133		4.3			SOLOMON IS	15
12	21	3	2	23	39.3N	114.3W	33		3.3			NEVADA	3
12	21	4	50	40	33.8N	51.5E	51		4.5	4.78	4.90	IRAN	29
12	21	8	34	37	7.1S	129.2E	143		4.4	4.22	4.30	BANDA SEA	24
12	21	12	34	23	21.2S	175.8W	90		5.1	5.76	5.18	TONGA IS	12
12	21	13	9	10	16.1N	119.7E	49		5.4	5.92	5.35	NEAR W UZON COAST	2
12	21	16	10	21	45.7N	151.1E	40		4.2	4.80	4.75	KURILE IS	19
12	21	16	23	18	32.5N	141.0E	37		4.3	4.77	4.95	E OF HONSHU JAPAN	19
12	21	22	4	10	23.4S	178.8W	112		4.2	5.67	5.15	TONGA IS REGION	12
12	22	1	20	11	14.3N	93.0W	33		4.4	4.06	4.00	OFF CHIAPAS MEX COAST	5
12	22	1	31	36	27.9S	67.2W	168		4.1	3.07	4.20	ARGENTINA	8
12	22	2	50	30	44.4N	114.6W	33		4.4			IDAHU	34
12	22	2	54	8	48.6N	119.7W	33		4.4			WASHINGTON	3
12	22	3	56	16	32.3S	69.2W	33		4.3	3.71	3.80	ARGENTINA	8
12	22	5	44	38	44.2N	114.5W	33		4.1			IDAHU	34
12	22	5	56	30	35.1S	67.7W	43		4.7	4.62	4.35	ARGENTINA	8
12	22	11	57	27	6.1S	146.9E	102		5.4	5.17	5.10	NE NEW GUINEA	16
12	22	13	35	38	34.9S	173.9E	82					NEW ZEALAND	11
12	22	16	43	13	39.2N	114.3W	33		3.3			E NEVADA	3
12	22	18		32	44.6N	149.4E	65		4.4			KURILE IS	19
12	22	20	10	30	45.3N	151.2E	45		4.1	3.33	4.00	KURILE IS	19
12	22	23	13	55	6.9N	73.0W	153		5.2	5.38	5.05	COLOMBIA	7
12	22		15	1	44.4N	114.8W	33		5.1			IDAHU	34
12	22		28	59	44.2N	114.6W	33		3.8			IDAHU	34
12	22	8	48	43	46.1N	7.5E						SWITZERLAND	36
12	22	13	42	23	43.8N	150.5E	33		4.7	4.34	4.20	KURILE IS	19
12	22	13	52	35	5.3S	144.9E	65			4.10	4.77	NE NEW GUINEA	16
12	22	16	24	46	24.5N	121.8E	130		4.7	4.17	4.37	NEAR E FORMOSA COAST	22
12	22	17	58	41	25.8S	177.8W	140		4.7	4.85	4.50	TONGA IS REGION	12
12	22	18	39	47	44.1N	149.4E	65		4.8	4.66	4.53	KURILE IS	19
12	22	21	3	40			23			4.11	4.90	LOCAL PMG 4.1	16
12	22	22	34	22	12.3N	72.8W	33		4.5	4.35	4.16	OFF N COLOMBIA COAST	7
12	24	1	14	6	46.4N	152.2E	40		4.3			KURILE IS	19
12	24		1	51	44.8N	111.5W	33					SW MONTANA	34
12	24	2	17	9	51.7N	177.1W	33		4.0	4.55	4.10	ANDREANOF IS	1
12	24	2	26	1	45.2N	151.4E	50		4.5	6.47	5.70	KURILE IS	19
12	24	2	40	43	6.6S	85.1W	33		4.3	4.21	4.10	W OF PERU	8
12	24	2	42	31	45.1N	151.2E	45		4.3			KURILE IS	19
12	24	3		57	45.4N	151.3E	50		4.9	4.72	4.50	KURILE IS	19
12	24	3	27	24	45.5N	151.5E	45		4.8	5.31	4.93	KURILE IS	19
12	24	9	7	59	5.0S	155.1E	197		4.5	5.16	4.90	SOLOMON IS	15
12	24	10	38	23	55.9N	161.0E	110		4.5	5.08	4.40	NEAR E KAMCHATKA COAST	19
12	24	11	18	15	13.1S	166.7E	61		5.5	5.61	5.08	SANTA CRUZ IS REGION	14

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	24	12	55	46	36.2N	139.7E	70		4.8	4.44	4.36	HONSHU JAPAN	19
12	24	14	25		10.0N	126.1E	33		5.7	4.41	4.58	SIARGO PI	27
12	24	14	57	12	39.6N	110.4W	33		4.1	1.85	3.65	UTAH	34
12	24	17	54	20	44.8N	111.2W	33		4.7			HEBSEN LAKI	34
12	24	18	37	6	5.9S	147.4E	40			4.43	4.70	E NEW GUINEA	16
12	24	19	1	12	6.6S	146.8E	53			3.03	4.13	NL NEW GUINEA	16
12	24	21	5	55	53.0S	159.5E	33		5.8	5.73	5.20	MAGUARIL IS REGION	17
12	24	23	56		31.1N	142.5E	33		4.2			HONSHU	18
12	25		44	2	52.3N	158.7E	80		4.7	3.90	4.10	NEAR E KAMOHATA COAST	18
12	25	2	59	6	7.0S	129.8E	212		4.3	4.14	4.10	BANDA SEA	26
12	25	5	27	21	17.7S	178.6W	523		3.4	3.94	4.00	FUJI IS REGION	11
12	25	5	56	40	47.2N	149.2E	295		4.2			OKHOTSK SEA	11
12	25	9		3	52.0N	172.1W	45		4.7	4.65	4.40	ANDREANOF IS	11
12	25	9	20	33	19.0S	173.2W	33		4.8	4.85	4.60	TONGA IS	11
12	25	16	14	8	37.2N	102.0E	33		4.6	4.13	4.00	TSINGHAI PROVINCE	27
12	25	20	4	11	44.2N	114.6W	33		3.7			IDAHO	34
12	25	20	18	16	18.2S	173.4W	33		4.6	4.50	4.40	TONGA IS	11
12	25	23	2	52	19.0N	108.4W	33		3.7			MEXICO COAST	16
12	25	23	55	14	39.1N	114.2W	33		3.6			E NEVADA	3
12	26	1	30	52	5.1S	102.2E	40		5.6	5.84	5.26	NEAR S SUMATRA COAST	24
12	26	3	58	52	39.2N	114.2W	33		3.5			E NEVADA	3
12	26	5	31	1			33			3.63	4.20	LOCAL SHI 7.8	29
12	26	5	35	15	5.1S	129.3E	175		4.6	4.35	4.36	BANDA SEA	24
12	26	7	58	22	76.5N	22.4E	33		5.1	5.13	4.72	SVALHARD REGION	40
12	26	8	9	2	46.6N	152.2E	50		4.5			KURILE IS	19
12	26	8	48	52	69.3N	16.5W	33		4.5	4.31	4.40	N OF ICELAND	11
12	26	10	46	27	43.6N	148.7E	33		4.4	5.25	5.20	KURILE IS	19
12	26	14	40	7	29.8N	110.2W	33		3.7			UTAH	34
12	26	16	23	54	1.4N	126.7E	65		4.8	5.24	4.88	MOLUCCA SEA	23
12	26	20	50	21	36.4N	71.2E	140		4.9	5.15	5.00	HINDU KUSH	48
12	26	21	11	12	51.2N	169.8W	33		4.3	4.99	4.56	FOX IS	11
12	26	23	21	33	86.1N	73.2E	33		4.3			ARCTIC OCEAN	40
12	27		17		13.4S	72.7W	42		4.1	1.84	2.65	S PERU	3
12	27	2	36	22	64.7N	123.3W	37		4.5	2.85	2.93	NW OREGON	4
12	27	3	57	10	14.5N	90.7W	33		3.9			GUATEMALA	5
12	27	5	21	48	19.1S	172.5W	33		4.5	4.78	4.46	TONGA IS	11
12	27	5	23	9	0.4S	105.2E	37		4.9	4.45	4.53	SUNDA STRAIT	24
12	27	9	45	48	4.3S	156.5E	33		4.5	2.98	4.22	SOLOMON IS	16
12	27	10	1	15	5.8S	105.5E	52		5.0	4.67	4.63	FLORIS SEA	24
12	27	12	48	46	44.9N	151.0E	37		4.1	5.03	4.40	KURILE IS	19
12	27	23	46	48	6.7N	82.0W	33		4.1	3.97	4.35	S OF COSTA RICA	6
12	28	1	44	5	26.6N	70.2E	205		5.0	4.70	4.57	HINDU KUSH	48
12	28	4	35	8	20.2S	177.2W	507		4.4	5.42	5.04	FUJI IS REGION	12
12	28	5	45	20	5.1S	153.5E	70		5.5	5.77	5.02	NEW IRELAND REGION	16
12	28	6	57	10	14.6N	92.2W	33		4.5	4.25	4.30	NEAR GUATEMALA COAST	5
12	28	8	23	19	44.8N	110.9W	33		4.3			YELLOWSTONE PARK	34
12	28		2	52	32.7S	178.9W	37		5.8	6.61	4.78	KERMADOC IS	14
12	28	12	44	41	18.1N	104.2W	33		3.9			MEXICO COAST	16
12	28	14	26	20	20.2S	114.2W	33		3.5			E NEVADA	3
12	28	15	19	58	24.0N	114.0W	33					E NEVADA	3
12	28	15	52	14	22.1N	114.1W	33		3.3			E NEVADA	3
12	28	16	48	27	14.4N	107.0W	33		4.3	4.84	4.80	OFF JALISCO MEX COAST	5
12	28	17	48	27	64.4S	51.8W	49	5.6	5.4	5.67	5.11	S CHETLAND IS REGION	10
12	28	19	17	24	18.5N	105.8W	33		3.9	3.79	3.60	OFF JALISCO MEX COAST	5
12	28	22	16	54	35.4N	41.8W	33		4.3			N ATLANTIC	32
12	28	23	27	27	62.8N	154.0W	33		4.2			ALASKA	1
12	28	23	55	8	52.0S	118.4W	33		5.0	5.54	4.70	S PACIFIC OCEAN	43
12	28	1	42	14	39.1N	114.2W	33		3.4			E NEVADA	3
12	28	2	31	39	18.4N	105.1W	33		3.8			MEXICO COAST	5
12	28			10	20.2S	177.8W	33		4.4	5.08	4.64	KERMADOC IS	14

MO	DA	HR	MN	SEC	LAT	LONG	DEP	MAG	MCGS	MTOT	MB	LOCATION	REG
12	29	3	41	28	18.8N	106.2W	33		4.1	2.97	3.25	MEXICO COAST	5
12	29	4	2	4	39.1N	114.2W	33					E NEVADA	3
12	29	4	6	12	39.1N	114.2W	33		3.4			E NEVADA	3
12	29	4	15	4	39.1N	114.2W	33		4.0	1.90	3.70	E NEVADA	3
12	29	4	34	31	19.1N	105.9W	33		3.8	2.69	2.90	MEXICO COAST	5
12	29	6	22	48	18.6N	105.8W	33		4.4	3.80	3.66	OFF JALISCO MEX COAST	5
12	29	6	38	58	39.1N	114.2W	33		3.7			E NEVADA	3
12	29	7	48	23	77.9N	21.5E	33		4.2	3.68	4.50	BARENTS SEA	40
12	29	8	36	59	20.6S	169.8E	65		4.8	4.43	4.25	NLW HEBRIDES IS	14
12	29	11	52	42	6.1S	148.9E	86		4.5	2.95	3.76	NEW BRITAIN	15
12	29	12	3	19	6.5S	106.7E	33		4.9	4.70	4.70	W JAVA	24
12	29	12	52	2	4.1S	151.9E	119		4.9	4.41	4.75	NEW BRITAIN	15
12	29	15	24		20.7S	178.4W	534		4.8	4.85	4.52	FIJI IS REGION	12
12	29	15	31	27	46.1N	10.4E						ITALY	31
12	29	17	15	39	18.5S	69.7W	113		5.5	5.73	5.27	N CHILE	8
12	30		58	13	3.4S	128.8E	82		5.0	5.10	4.47	BANDA SEA	23
12	30	1	15	25	21.6N	144.5E	120		5.2	5.48	5.02	MARIANA IS REGION	18
12	30	3	12	52	19.9S	177.8W	522		4.2	4.93	4.70	FIJI IS REGION	12
12	30	3	28	53	44.4N	110.3W	33		4.0			YELLOWSTONE PARK	34
12	30	3	57	9	54.4N	160.6E	33		4.1			E KAMCHATKA	19
12	30	6	23	35	29.3S	176.8W	34		4.7	4.47	4.00	KERMADEC IS	12
12	30	6	52	24	19.2S	69.4W	33			2.30	3.56	CHILE-BOLIVIA	8
12	30	7	30	33	14.4S	167.4E	178			3.76	4.18	NLW HEBRIDES IS	14
12	30	8	27	45	18.8N	105.8W	33		3.9			MEXICO COAST	5
12	30	10	20	3	19.8S	169.9E	33			3.13	3.50	LOYALTY IS	14
12	30	13	29	25	45.5N	150.6E	40		5.7	6.18	5.41	KURILE IS	19
12	30	13	46	46	40.1S	84.3W	33		5.0	5.55	4.70	W OF CHILE	9
12	30	13	47	8	38.8N	122.8W	33		4.7	3.64	4.00	MENDOCINO CO CALIF	3
12	30	15	4	14	9.4N	126.0E	102		5.3	5.56	5.36	NEAR E MINDANAO COAST	22
12	30	16	20	48	18.3S	70.1W	150		4.1	2.77	3.85	N CHILE	8
12	30	20	32	20	42.4N	142.0E	50		4.6	4.68	4.35	HOKKAIDO JAPAN	19
12	30	20	52	12	18.1S	172.6W	33		4.4	3.49	3.70	TONGA IS	12
12	30	22	6	7	6.9N	94.7E	64		5.6	5.07	4.81	NICOMAR IS	24
12	30	23	39	27	2.5S	78.4W	33		4.3	3.66	4.03	EQUADOR	8
12	31	1	31	40	21.5S	176.9W	390		4.1	4.37	4.40	TONGA IS	12
12	31	4	28	4	45.0N	151.3E	33		4.2			KURILE IS	19
12	31	10	17	50	19.0N	105.2W	33		3.8			MEXICO COAST	5
12	31	10	21	52	19.1S	178.1W	609		4.5	5.99	5.37	FIJI IS	12
12	31	10	45	18	45.2N	151.5E	45		4.5	5.55	5.00	KURILE IS	19
12	31	12	56	58	63.7N	146.0W	33		3.8			ALASKA	1
12	31	14	22	7	12.4N	87.9W	77		4.3			NICARAGUA	6
12	31	15	18	8	38.4N	45.2E	33		4.5	4.57	4.66	NW IRAN	29
12	31	17	37	32	56.5S	26.0W	30	5.5	6.3	6.76	5.83	SANDWICH IS	10
12	31	18	58	43	7.1S	129.3E	100		4.6	4.12	4.10	BANDA SEA	24
12	31	19	16	55	17.4S	174.2W	80		5.4	5.71	5.16	TONGA IS	12
12	31	21	41	43	16.6N	99.0W	33		4.3	3.51	3.55	GULPERO MEXICO	5

## APPENDIX B

### REVIEW OF PREVIOUS REPORTS

Contributions this program has made toward improving knowledge of seismicity and related studies during the past three years are provided for quick referral by the following summaries of reports submitted and published.

#### A. SEMIANNUAL TECHNICAL AND FINAL REPORTS

##### 1. No. I, 20 November 1961

The first semiannual technical report pointed out many large gaps in the coverage of earthquakes in the magnitude range four to five. The reasons for these gaps were the limited capabilities of some established stations and insufficient areal coverage, even if all had been first order. In many regions of the earth, it is doubtful if earthquakes of magnitude five were recorded by a sufficient number of stations to permit evaluation, while shocks of magnitude four went undetected.

The report also discussed data collection, data interpretation problems and magnitude determination.

##### a. Data Collection

The study required a large number of records from many regions of the earth. Several methods of collection were tried and microfilming was found best.

Original seismograms were copied at seismograph stations with a Recordak portable microfilmer using 16-mm microfilm. This permitted a great amount of data to be amassed in a relatively short time.

Based on evaluation of several film viewers, Texas Instruments chose the Recordak MPC-1 for use with both 16-mm and 35-mm film. The principal advantage of the viewer is image adjustment which allows precise enlargement of the record.

##### b. Data Interpretation

Non-uniformity in time marks, time calibration, drum rate and instrument calibration was resolved by use of a standardized data collection



form and establishment of a portfolio of pertinent facts for each station visited. The analysis form and procedure included entries for the determination of magnitude, P/S ratios and amplitude of ground motion.

#### c. Magnitude Determination

Seismicity calculation depends upon accurate determination of earthquake magnitudes; therefore, considerable effort was made to investigate and refine determination methods.

Most events were recorded only by high-gain, short-period instruments. This limited the choice of magnitude methods to two: the original Richter near-event method and the body-wave method for P. Most of the high-gain, short-period instruments available were vertical component, thus the original Richter method could be used in only a very limited number of situations. This required that the attenuation curves for P used with the body-wave method be extrapolated to distances less than 5 degrees. An extrapolation was made and tested by comparing results with the original Richter method for stations where short-period horizontal instruments were available also. Both horizontal and vertical surface wave methods and others were used for teleseisms.

#### d. Determination of Radii of Perceptibility

When constructing maps of seismicity, it is desirable to know the limits of a station's capability to record an event of given magnitude. For very near shocks recorded on short-period instruments, the original magnitude formula may be extended to the instrument in use and  $\log A$  determined for a given magnitude. A chart of  $\log A_0$  versus  $\Delta$  is given by Richter (1958), and an approximate range of perceptibility may be obtained if a certain amplitude signal is assumed to be necessary for magnitude determination.

Radii of station perceptibility can be estimated crudely at best, but these estimates show in general the amount of coverage to be expected with existing instrumentation.

#### 2. No. II, 1 May 1962

This report contained discussions of magnitude determination, perceptibility calculations, seismicity evaluation and a method for obtaining relative noise power density spectra from polarity information.

#### a. Magnitude Determination

Station correction factors for magnitude determination were calculated routinely. The magnitudes obtained from short-period instruments for teleseisms were frequently one unit or more lower than those of the BCIS or the USC&GS, thus requiring some very large station corrections. These corrections, however, did not seem applicable to shocks at less than shadow-zone distances, which suggested that short-period seismic P-waves were attenuated at a higher rate than long-period P-waves for the paths affected by the shadow-zone mechanism. Longer period instruments indicated station corrections of less than half a magnitude unit. These instruments were similar to the ones used by Gutenberg and Richter in deriving the attenuation curves of P-waves. Additional study was suggested to determine the spectral content of P-waves and the manner in which the various components were attenuated as a function of distance.

#### b. Evaluation of Discrimination Criteria

A study of magnitudes showed that a considerable variation in the attenuation of P and S phases may be expected for different paths, particularly in the 6- to 20-degree range, and for short-period P-waves at teleseismic distances. Evaluation of radiation patterns expressed as P/S ratios or Rayleigh wave amplitudes must be assessed with knowledge of path attenuation variability which may be as great as the variation caused by source type. Thus, studies were initiated to determine attenuation functions of common earthquake phases as an aid to improving discrimination criteria as well as magnitude determination.

#### c. Radii of Perceptibility

Several calculated radii of perceptibility were verified by studies of magnitudes as a function of distance for shocks recorded by particular stations. The problem was shown to be a three-dimensional one where, in general, deeper focus shocks are perceptible over larger areas than are shallow-focus ones. The radii of perceptibility for shocks of magnitude five and larger often terminated in the shadow-zone region where the station correction was shown to change drastically. Much additional research would be needed to delineate this problem.

#### d. Noise Studies

A research program to determine practical methods of obtaining noise spectra from visual records was completed. A method utilizing only the polarity of the recorded trace was found to be a promising one for finding relative power density spectra.

### 3. No. III, 31 October 1962

#### a. Earthquake Recurrence Curves

Richter (1958) stated that the logarithm of the number of earthquakes of a given magnitude is a straight line function of the magnitude. That is:  $\log N = a - bM$ . For most areas of the world the only data available to assess the constants in this relation were from earthquakes of magnitudes greater than six. Because large earthquakes do not occur frequently, many years of data had to be analyzed before these constants were obtained and little was known concerning the accuracy of the formula when applied to smaller magnitude events. Initial studies under this program showed that the recurrence curve for small earthquakes varied in slope and intercept from region to region.

#### b. Noise Spectra

The theoretical details of a method to obtain relative power density spectra of noise from polarity data only were presented. Assumptions were justified and examples given.

#### c. Microseisms

Maps of ground motion during January, May and September, 1960, were constructed for the 6-second period microseism range. These contoured world maps showed a consistent pattern of high activity over oceans and lower activity over continents. Anomalous areas suggested that further research might be profitable. The study indicated that the noise seen on seismographs, although fundamentally ground motion due to external causes such as weather and surf conditions, is dependent to a great extent on instrument response characteristics. To study the true ground motion, records from similar, recently calibrated instruments must be used.

### 4. No. IV, 30 April 1963

Research efforts in several areas peripheral to the main seismicity theme were presented. These included fault motion studies, fault-plane mapping, channel phases and the azimuthal variation of Rayleigh waves.

#### a. Fault Motion Studies

Methods were developed for obtaining fault-plane solutions from P and S measurements made at a given instant in time. These methods did not require a great number of stations nor did they always require stations well distributed radially and azimuthally about the epicenter as does Byerly's (1955)

method. The equations were derived from those of Nakano (1923) which expressed the displacement of P, SH and SV at large distances from a Type 1 source (single couple with moment). Because of uncertainties in the amplitudes of SV and SH at distances shorter than 40 degrees, the method as developed at this time could be used only with very large teleseisms.

#### b. Fault Mapping

Fault-motion maps were presented to improve understanding of major fault motions in seismic areas. It was not anticipated that these maps would be of immediate aid in detecting nuclear explosions; however, the study has long-range application. That is, after obtaining a better and more accurate picture of the fault motions around the world, it may be much easier to identify atypical events.

Generally, there is a close relationship between faulting and major tectonic features. Original fault patterns are easily recognized in many areas. Fault-plane solutions from first motion are limited to shocks of magnitude greater than six. However, if fault patterns and constancy for small shocks in a given area are similar to those of large shocks, first-motion polarity, S-polarization and amplitude patterns should be consistent and would constitute diagnostic means for separation of atypical events in a given area.

#### c. Channel Waves

An investigation was made of parameters affecting propagation of some channel phases. A few records of the Russian test series of 1961 and GNOME were scanned for indications of select phases such as Pa and Sa, which were discovered by Caloi (1953). No conclusive picks could be made.

This failure is probably due to instrument limitations and lower energy release rather than the mechanism involved.

According to Bath (1962), continental channel waves are propagated from blasts as well as earthquakes; hence, their presence or absence from recordings is not indicative of either type of mechanism. Channel waves are not recommended as criteria for discrimination between earthquakes and underground nuclear explosions.

#### d. Surface Wave Radiation Patterns

Radiation patterns about earthquake epicenters were obtained by:

- (1) Plotting residuals of published magnitudes subtracted from calculated magnitudes,

- (2) Plotting maximum trace amplitude, corrected for epicentral distance at all stations recording surface waves, and
- (3) Determining and comparing the same seismic peak at various stations.

All methods showed some promise of yielding information on patterns of surface-wave radiation about a source. However, there are several variables and potential errors such as path dependence and magnification errors which must be considered.

Considering these factors, the radiation pattern method of identification is recommended only as minor supporting criteria. The worldwide standardized stations should improve the capability to evaluate radiation patterns because of matched instrumentation and better known instrument response curves. However, path dependence, station distribution and human error in identification will still present problems.

Determining amplitude variations with azimuth by Brune's (1961) method requires records from similar long-period instruments recently calibrated. It is necessary to know the approximate phase velocity or the crustal thickness between the epicenter and station or between adjacent stations. Most earthquake records do not satisfy the criteria necessary for this method.

#### e. Appendices

Several very useful appendices were included. They presented the theory of the newly developed fault-plane solution method, a study of the large Chilean earthquake sequence of 21 May to 1 June 1960 using these methods, a summary of 300 events for which fault-plane solutions were obtained from the literature, and travel time curves for several channel waves.

#### 5. No. V, 31 October 1963

This Semiannual Technical Report was presented in the following three volumes:

##### a. Volume I — Review of the Program

A general discussion of the 1960 and 1963 studies and a review of procedures, methods and problems encountered in the previously mentioned reports.

## **b. Volume II — Station Assessment**

Capabilities of seismograph stations in existence in 1960 are discussed in this volume. An integral factor in accurate epicenter determination is a capable network of stations. For that reason, the task of assessing or evaluating seismograph stations was undertaken. Based upon this study, which included perceptibility, instrumentation, noise level and personnel, twenty-three stations were selected for best recording capabilities in 1960.

## **c. Volume III — Noise Spectra**

Methods for obtaining absolute noise spectra and ground motion from relative spectra are described in this volume. It was concluded that the combined accuracy limitations of the average noise power estimates and instrument calibrations limit absolute power density estimates for 1960 data to about an order of magnitude. Relative power densities not less than about two and one-half orders of magnitude below the peak power density of a particular spectrogram are accurate.

## **6. No. VI, Earthquake Studies, 17 June 1964**

This report contained discussions of polarity studies, fault-plane studies and attenuation studies.

### **a. Polarity Studies**

The polarity method of fault-plane solutions requires the observation of polarity at a number of stations. Data from Sprengnether instruments of the Worldwide Standard Seismograph network showed waveforms of P and S could be traced across areas of continental dimensions and larger. Ability to follow the waveform has allowed polarity determinations which were highly consistent with the general polarity pattern.

### **b. Fault-Plane Solutions**

Fault-plane solutions were attempted for several earthquakes using the P-polarity method. Although these events show few P-polarities which are inconsistent, little confidence can be placed in any tentative solution. Since all solutions contain some nodal figures which were arbitrarily drawn, the data will allow other configurations. Use of S-data has permitted the exclusion of some possibilities in fault-plane orientation as well as exclusion of certain mechanism types.

### c. Attenuation Studies

Attenuation patterns in the vicinity of nodal lines were evaluated. In one instance, the attenuation pattern was not clear; in another it was found that the calculated magnitude in the vicinity of the nodal surface was on the order of one unit lower than the calculated magnitude far removed from the nodal surface.

Two distinctly different polarity and attenuation patterns were found in a suite of Kurile Islands earthquakes; similar polarity patterns, however, yielded similar attenuation patterns. Evidence is presented which suggests that it may be practical to identify the polarity patterns from attenuation data recorded at a limited number of stations.

#### 7. "Worldwide Collection and Evaluation of Earthquake Data," 15 January 1960, Final Report on 1960 Seismicity Evaluation

A quantitative view of seismicity results from this study, since data are presented which allow direct comparison of earthquake activity from region to region. Magnitude data are much more complete than previously available from any other source.

To provide a comprehensive view of seismic activity, several presentation methods are used; among them are seismicity and epicentral maps which permit both a region-to-region comparison of activity and a comparison of the 1960 activity with the average annual seismicity.

Emphasis in this study was placed upon earthquakes in the magnitude range 5.0 to 6.0 (Richter scale) because capabilities of the seismograph stations furnishing data were sufficient for recording all shocks of magnitude 5.0 or greater. Many shocks of magnitude 3.0 to 5.0 were also recorded and results are given for these events.

Magnitude calculations, which accounted for a large portion of work in this study, are given for as many events as possible. These calculations permit energy classification of nearly all earthquakes listed in bulletins of the Bureau Central International de Seismologie (BCIS) for 1960. Publication of these magnitude data allow better assessment of the earth's seismicity and also enables seismologists to evaluate, quantitatively, capabilities of the seismograph stations which recorded the listed earthquakes.

### B. SPECIAL REPORTS

In addition to the Semiannual Reports, ten special reports have been submitted:

1. "Seismogram Atlas of Nuclear Explosions," 6 April 1962, Report (Unnumbered)

This includes seismograms collected from worldwide stations for the USSR nuclear test series of October, 1961, and recordings of the GNOME shot by eight U. S. and foreign stations. The atlas presents a sampling of records from 978 to 8044 kilometers epicentral distance.

For the atmospheric explosions, surface waves from similar sources at the same station seemed to duplicate themselves. No Love waves were observed from atmospheric explosions at teleseismic distances.

2. "Provisional Appraisal of First-Motion Data," 22 January 1963, Special Report No. 1

The percentages of undefined polarity and the predominance of a single polarity on records from one station indicate that first motion may be unreliable criteria for identifying seismic events.

3. "Russian Seismicity Methods and the Seismicity of the USSR and China," 20 February 1963, Special Report No. 2

Russian literature concerning seismicity methods and seismicity of the USSR and China was reviewed. It was shown that much of the Sino-Russian border and the whole northwestern quarter of China is relatively seismic for small events. These regions or the highly seismic Kamchatka Peninsula would be ideal sites for concealed underground tests. A controversy in the Russian literature concerning whether earthquake recurrence is or is not a linear relation was reviewed. Work under the seismicity project shows that each region has its own recurrence characteristics.

Seismic areas in the USSR probably do not exceed ten percent of the country's total area, but about half of continental China is subject to earthquake activity. A map was prepared showing areas of perceptibility for magnitude-four events for most high-gain modern stations near, but outside, the USSR and China. Seismically active zones which are not covered adequately by existing instrumentation, particularly those with surficial material which would highly attenuate signals from buried explosions, were shown.

4. "Worldwide Microseismic Activity," 21 February 1963, Special Report No. 3

This is an extension of previously reported work. Microseismic noise was plotted for each month. In general, amplitudes were low over continents and high over oceans; seasonal variations were found. Some persistent



anomalies such as a Pacific low and an Antarctic high were also found. These noise background maps should be helpful for locating new stations, developing new instruments, determining the type of instrument best suited for a station and studying possibilities of detecting low-yield underground nuclear explosions.

5. "Application of Source Mechanism Studies to Identification of Nuclear Explosions," 21 February 1963, Special Report No. 4

This is an extension of the fault-plane plotting previously reported.

6. "Evaluation of Records from Normandy Array ALPENS," 22 March 1963, Special Report No. 5

The capabilities of the ALPENS station were assessed to prove or disprove that the network could record low-magnitude events better than other stations and particularly to emphasize the capability for recording low-magnitude events in the USSR. Several shocks from various azimuths recorded at a number of stations were compared. Signal-to-noise ratios from the ALPENS records appeared better than those at the other stations. Theoretical limits of perceptibility for ALPENS for  $m_b = 5.0$  includes all of the USSR except a shadow zone in eastern Siberia. For shocks of  $m_b = 4.0$ , theoretical perceptibility is very small with none of the USSR included. The ALPENS network appears to be more capable than most seismograph stations in its ability to record teleseismic events.

7. "An Assessment of the Present Capability to Monitor Seismic Activity in the USSR and China," 27 May 1963, Special Report No. 6

Seismograph stations outside Communist areas in 1960 did not possess the capability to detect all seismic events of  $m_b = 4.0$  within the USSR and China.

Good estimations of the annual number of earthquakes comparable in size to underground nuclear explosions depend upon knowledge of foreshock-aftershock sequences and recurrence relationships between shocks. For much of the area of interest, the smallest shocks for which data may be accumulated have  $m_b = 4.5$ . Underground nuclear blasts in many parts of China and the USSR with equivalent seismic magnitudes of  $m_b \leq 4.0$  would not be detected.

The report recommended that the capability to record seismic events in Asia be improved by:

- (1) Increasing the number of standard stations, particularly in the Middle East, India, Pakistan, and Southeast Asia;
- (2) Moving some of the present installations to sites having lower microseismic background levels, or apply filtering techniques to remove objectionable noise; and
- (3) Constructing highly capable array stations south and west of the USSR and China.

8. "Surface Wave Attenuation," 27 June 1963, Special Report No. 7

Objectives of the study were to use the data available in the program to determine azimuthal and path dependence of surface-wave amplitudes for possible application to the problem of distinguishing earthquakes from explosions.

Although data from nuclear explosions were meager, the study showed that surface waves from blasts, like those from earthquakes, do not form circular radiation patterns about their points of origin. Change in relative surface-wave amplitude is expected as a function of azimuth from earthquakes, but the reason is less clear why very much deviation from the circular pattern should be evident for nuclear blasts, as was the case with the limited data studied. The anomalous amplitudes appear to be related to surface-wave travel paths and local geology.

Path dependency of surface wave attenuation was indicated from the study. Since there is no theoretical cause for azimuthal dependence inherent in elastic wave radiation from an explosion, any variation noted at distance must be primarily a function of the travel path.

9. "Comparison of Earthquake Magnitude Determination Methods," 28 July 1963, Special Report No. 8

Magnitude determination from P-waves recorded by short-period instrumentation is shown to require an inordinately high positive station correction for teleseismic distances. The correction needed for longer period instrumentation is less.

The relationship between  $m_b$  and the original Richter magnitude  $M$ , or its equivalent, is explained. The relationship is not simple and includes effects caused by the use of short-period instruments and different rules for measuring P amplitudes.

10. "Preliminary Report on Earthquake Studies," 20 March 1964, Special Report No. 9

Objectives of the study were to determine the feasibility of obtaining polarity data from secondary phases and to gain a better insight into the control that the focal mechanism exerts on the seismic record. Specifically, an attempt was made to determine:

- (1) If polarity of secondary phases can be determined from Standard recordings,
- (2) The actual effect of the focal mechanism on the attenuation patterns of P and S, and
- (3) The significance of observed radiation patterns of secondary phases.

This report discusses the methods, procedures and problems encountered in earthquake studies.

#### C. PAPERS PUBLISHED

1. Hofmann, R. B. and Wylie, R. W., "Computer Programs for Magnitude Determination and Seismic Data Handling," Earthquake Notes, (Seismological Society of America, 1963), V. 34, No. 3—4

A computer program to calculate magnitudes by most of the well known methods is described. One, two and three dimensional attenuation curves and seventeen formulas are stored in the program. Station corrections and deviations are automatically computed.

The feasibility is discussed of combining this program with others developed by Texas Instruments Incorporated under VELA UNIFORM contracts to obtain a seismic data handling system compatible with the current state of knowledge.

2. Guidroz, R. R., "International Cooperation to Improve Seismological Research," Paper presented to the 44th Annual Meeting of the American Geophysical Union and Subsequently Published under the Title "Standards for Seismograms," Geotimes, (1963), V. 8, No. 3

Seismograms from stations all over the world are being collected and compared in the course of studies of seismicity and other subjects. Unfortunately, these records are not uniformly marked for data such as component orientation and identification and they often lack the basic information which would permit them to be used effectively. Recommendations are presented that a set of minimum international standard requirements for seismogram marking be adopted.

3. "Fisher, R. L., "Worldwide Seismicity," Paper Presented to the 60th Annual Meeting of the Geological Society of America, (Seattle, March, 1964)

Seismicity in 1960 is defined in terms of every release and annual numbers of earthquakes for the range  $5.0 \leq M_S < 6.0$ . Maps are presented that show the worldwide seismicity evaluation and also epicenters of shocks ( $M_S \geq 4.0$ ) that were studied. Regional distribution of earthquakes with respect to magnitude and depth are also shown.

More than 4100 events with magnitudes of at least  $M_S = 3.0$  were studied from the data of 61 seismograph stations. Distribution and capabilities of these stations are such that results should be complete for shocks greater than or equal to magnitude five.

The year was highly seismic compared to the average year pictured by Gutenberg and Richter (1954). According to their figures, mean annual numbers for shallow shocks are: Class a ( $M_S \geq 7-3/4$ ) — 2.2, Class b ( $7.0 \leq M_S < 7-3/4$ ) — 11.9, and Class c ( $6.0 \leq M_S < 7.0$ ) — 108. Also, an estimate of 800 per year was given for the range  $5.0 \leq M_S < 6.0$ . The corresponding figures for 1960 are 4, 14, 199, and 1188.

4. McGarr Arthur Hofmann, Renner B. and Hair, George D. "A Moving-Time-Window Signal-Spector Process," Geophysics (1964), V. 24, No. 2, pp. 212—220.

Spectra of signals of short time duration may be obtained from either long or short samples.

Long samples result in more accurate power-density spectra, but most of the spectrum power will be contributed by noise. Spectra from short samples are significantly altered by truncation effects. A process is described which makes use of the advantages of both methods. Truncation effects are reduced by "hanning" in the frequency domain. The average spectrum of noise immediately preceding the signal is subtracted from all spectra. A moving-window process allows investigation of signal spectra as a function of time. Examples of the same earthquake signal recorded on several types of instruments illustrate the broad, total spectra content of P-waves.

5. O'Brien, D. P. and Harley, T. W., "An Amplitude-Ratio Fault-Plane Solution Method, With Application to the May, 1960 Chilean Series," Paper Presented to the 45th Annual Meeting of the American Geophysical Union, (Washington, April, 1964)

A fault-plane solution technique, which uses ratios of Nakano's theoretical expressions for P, SV and SH displacements at large distances from a Type-I source, is presented. SV/SH ratios are used to determine fault-motion direction and P-ratio data are used to determine fault-plane orientation. The method requires a relatively small amount of data, so that it may be applied to Type-I earthquakes with poorly distributed or sparse data, which cannot be solved using Byerly's extended distance technique. Three earthquakes of the May, 1960 Chilean aftershock series are solved using the amplitude ratio technique. The solutions indicate that the abrupt increase in the slope of the Chilean series strain-release curve, which occurs one day after the main shock, corresponds to a change from transcurrent to dip-slip faulting; the subsequent decrease in slope about 2.5 days after the main shock corresponds to a return to transcurrent faulting.

6. Guidroz, R. R., "A Summary of Primary Findings—Worldwide Collection and Evaluation of Earthquake Data," Paper Presented to the 45th Annual Meeting of the American Geophysical Union (Washington, April 1964)

The study of 1960 data from worldwide stations was grouped in three categories: seismicity, noise and earthquake studies. The seismicity evaluation included special studies of magnitude determination, station assessments and recurrence curves. Areal coverage by established stations during 1960 was insufficient to record all earthquakes of magnitude four to five. In several regions of the earth it is doubtful that earthquakes of magnitude five were recorded by a sufficient number of stations to permit evaluation while shocks of magnitude four probably went undetected. This study, which included investigation of over 4100 events, indicated that each seismic region has its own recurrence characteristics. The noise studies included comparison of digital and visual determination of noise background. Visual noise measurements yield an indication of the average peak amplitudes but cannot be directly related to the amplitude or power density spectra of the noise record. Storm-generated microseisms with 2- to 10-second periods were more prevalent in winter months and were strongly attenuated at continental margins. This study substantiated findings by other investigators that there is considerable variation in attenuation of short-period P-waves at teleseismic distances and of P and S phases for different paths, particularly in the 6- to 20-degree range.

7. Hofmann, R. B., "Magnitude Determination Problems for the World-wide Collection and Analysis Program," Proceedings of the VESIAC Conference on Seismic Event Magnitude Determination, Acoustics and Seismics Laboratory, Institute of Science and Technology, University of Michigan, May 1964, pp. 51-57.

Until recently, most of the world's seismograph stations were not equipped with short-period horizontal instruments. Thus, the near-event method cannot be used with 1960 data from most stations to determine magnitudes at short distances. The body wave methods remain the only alternative, but, at short epicentral distances, S is difficult to distinguish from surface modes and PP is not frequently observed. The remaining P method has been the principal method for determining magnitudes of small events ( $M < 5$ ) for this project.

8. Hofmann, R. B., "Limitation of Correction Factor Application to Magnitude Formulas," Proceedings of the VESIAC Conference on Seismic Event Magnitude Determination, Acoustics and Seismics Laboratory, Institute of Science and Technology, University of Michigan (May 1964) pp. 59-61.

Within the normal errors inherent in a single magnitude determination at conventional observatories, a station magnitude correction is shown to provide reasonable magnitudes for teleseisms regardless of the cause of anomaly. The reason for station magnitude corrections has usually been cited as the effect of local geology or pier mounting at the station, although it is general knowledge that calibration errors are also influencing factors. If station corrections of short-period seismographs are assumed applicable for events at all distances, instrument magnifications are suspect. A downward revision of as much as one hundred times would eliminate the necessity for large correction. The much smaller correction at short distances detracts from this or allied possibilities.

If, from a different point of view, the relationship between unified magnitudes,  $m$ , and the Richter magnitude  $M$  is desired, then  $M$  determined by established stations can be plotted against  $m$  determined by the station to be calibrated. The best line through the points will then establish the conversion formula.

9. Fisher, R. L., "A Study of Magnitude Determinations From World-wide Data," Proceedings of the VESIAC Conference on Seismic Event Magnitude Determination, Acoustics and Seismics Laboratory, Institute of Science and Technology, University of Michigan (May 1964), pp. 63-73.

One of the principal objectives of Texas Instruments contract for Worldwide Collection and Evaluation of Earthquake Data for 1960 is a study of the recent seismicity of the earth, based upon smaller-magnitude shocks. Magnitude data for most areas are quite incomplete except above  $M = 6.0$ ; consequently, calculation of magnitudes was a necessity.

It was found in collecting data from a total of 150 stations that the instrumentation varied widely in type and quality. There were 16 types of instruments at stations which had records of sufficient quality for study, with generally large variation in instrument constants within each type. Most of these instruments were types which record body waves best; as a result, more magnitudes were determined from body waves than from surface waves. Magnitudes, however, were calculated by as many methods as possible, to accumulate such data from more stations and for more events than any single method would allow.

10. Hofmann, R. B. and Wylie, R. W., "Magnitude Calculation for the Worldwide Collection and Analysis Program," Proceedings of the VESIAC Conference on Seismic Event Magnitude Determination, Acoustics and Seismics Laboratory, Institute of Science and Technology, University of Michigan, (May 1964) pp. 75-81.

Several methods of magnitude determination are in common use; each has advantages and limitations. The methods and conditions under which each may be used are presented.

11. Hofmann, R. B. and Wylie, R. W., "A Magnitude Calculation and Data Handling System," Earthquake Notes, Seismological Society of America, (1964) V. 35, No. 1-2, pp. 14-27.

A computer system has calculated magnitudes for earthquakes recorded at 100 different stations and for 63,000 station events. Sixty-six different formulas are utilized to calculate magnitudes, depending upon the input data available. Measurements of P, S, PP, L, and R, recorded on up to three different types of three-component or single seismometers at a station, may be converted to magnitudes. Hypocenters from different distances and depths are utilized.

The system provides averaged magnitude for each event from many stations with a wide variety of instruments. Statistics lists, including the station correction and its standard deviation for each magnitude type at each station, are automatically provided.

Combination of this system with the Automated Bulletin System, which identifies phases from arrival times and hypocenter data, could provide advanced seismic data processing and retrieval needed to compliment the improved instrumentation now available.

## REFERENCES

- Båth, Markus, "Earthquake Magnitude Determination From the Vertical Component of Surface Waves," Transactions, American Geophysical Union, Vol. 33, No. 1 (1952).
- Båth, Markus, "The Problem of Earthquake Magnitude Determination," Bureau Central International de Séismologie Series A, Travaux Scientifiques, Fascicule 19 (1954).
- Båth, Markus, Seismicity of Europe, IUGG Monograph No. 1 (1960).
- Båth, Markus, "Seismic Records of Explosions - Especially Nuclear Explosions, Part III," FOA4 (1962).
- Brune, J., "Radiation Pattern of Rayleigh Waves From the Southeast Alaska Earthquake of July 10, 1958," A Symposium of Earthquake Mechanisms, Dominion Observatory, Ottawa, Canada, Vol. 24, No. 10 (1961).
- Byerly, P. E., "Nature of Faulting as Deduced From Seismograms," Bulletin of the Geological Society of America, Special Paper 62: Crust of the Earth (1955).
- Caloi, P., "Onde Longitudinali e Transversali Guidate dall' Astenosfera," Atti Accademia Nazionale dei Lincei. Classe di Scienze Fisiche Matematiche e Naturali. Rendiconti, Vol. 15 (1953).
- Duda, S. J., "Strain Release in the Circum-Pacific Belt, Chile: 1960," Journal of Geophysical Research, Vol. 68, No. 19 (1963).
- Gutenberg, B., "Amplitudes of Surface Waves and Magnitudes of Shallow Earthquakes," Bulletin of the Seismological Society of America, Vol. 35, No. 1 (1945a).
- Gutenberg, B., "Amplitudes of P, PP and S and Magnitudes of Shallow Earthquakes," Bulletin of the Seismological Society of America, Vol. 35, No. 2 (1945b).
- Gutenberg, B., "Magnitude Determination for Deep Focus Earthquakes," Bulletin of the Seismological Society of America, Vol. 35, No. 3 (1945c).
- Gutenberg, B. and C. F. Richter, Seismicity of the Earth and Associated Phenomena, Princeton University (1954).



Gutenberg, B. and C. F. Richter, "Earthquake Magnitude, Intensity Energy and Acceleration," Bulletin of the Seismological Society of America, Vol. 46, No. 2 (1956).

Gzovsky, M. V., V. N. Krestnikov, I. L. Nersessov and G. I. Reisner, "New Principles in Establishing Seismic Regions, Based on an Example From the Central Tien-Shan. II," Bulletin (Izvestiya), Academy of Sciences, USSR, Geophysics Series, No. 2 (1960).

Nakano, H., "Notes on the Nature of Forces Which Give Rise to Earthquake Motions," Seismological Bulletin of the Japan Meteorological Observatory, Vol. 1 (1923).

Preliminary Determination of Epicenters, Cards 63-1 through 63-110, Coast and Geodetic Survey, Commerce Department, Washington, D. C.

Richter, C. F., "An Instrumental Earthquake Magnitude Scale," Bulletin of the Seismological Society of America, Vol. 25 (1935).

Richter, C. F., Elementary Seismology, W. H. Freeman and Company, San Francisco, California (1958).

Rothé, J. P., "Tableau de la Seismicité du Globe Pendant L'Année 1960," Revue pour L'Étude des Calamités, L'Union Internationale de Secours, Geneva, December, 1962.

Vvedenskaya, N. A., "Instrumental Observations of Weak Earthquakes as a Basis for the Establishing of Seismic Regions," Bulletin (Izvestiya), Academy of Sciences, USSR, Geophysics Series, No. 2 (1958).

Periodic bulletins published by many seismograph stations were of great assistance in this seismicity study. The following bulletins were particularly useful:

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Osservatorio Geofisica Sperimentale  
Viale R. Gessi 4  
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Strasbourg, France  
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DOCUMENT CONTROL DATA - R&D		
(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)		
1. ORIGINATING ACTIVITY (Corporate author)		2a. REPORT SECURITY CLASSIFICATION
Texas Instruments Incorporated P. O. Box 5621 Dallas, Texas		Unclassified
3. REPORT TITLE		2b. GROUP
Worldwide Collection and Evaluation of Earthquake Data		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates)		
Final Report: 15 May 61 — 15 Nov 64		
5. AUTHOR(S) (Last name, first name, initial)		
Fisher, Ray and Guidroz, Ralph		
6. REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
18 Nov 64	182	20
8a. CONTRACT OR GRANT NO.	8b. ORIGINATOR'S REPORT NUMBER(S)	
AF 19(604)-8517	AFCRL - 64 - 964	
a. PROJECT NO.	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
8652		
c. TASK		
865207		
d.		
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U. S. Government agencies may obtain copies of this report directly from DDC. Other qualified users shall request through U.S. Dept. of Commerce, Office of Technical Services, Washington, D. C.		
11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY	
Report on Worldwide Seismicity	Air Force Cambridge Research Lab. Office of Aerospace Research Bedford, Massachusetts	
13. ABSTRACT		
<p>Seismic activity in 1963 is documented and compared to 1960 and other years. Other studies undertaken over the past three years are reviewed and summarized. <del>TOP</del></p> <p>The worldwide level of seismicity in 1963 is shown to have been considerably lower than in 1960. Comparison with Gutenberg and Richter's (1954) data shows 1963 seismic activity about average with respect to total shocks <math>M_s \geq 6.0</math>. However, more shocks in the range <math>5.0 \leq M_s &lt; 6.0</math> were recorded in 1963 than predicted by Gutenberg and Richter (1954). <del>TOP</del></p> <p>Epicenter maps showing events for which <math>M_s \geq 4.0</math> and <math>m_b \geq 4.0</math> for shallow and normal focus and also for intermediate and deep focus events are included. A seismicity map based on annual numbers of shocks (<math>5.0 \leq M_s &lt; 6.0</math>) per unit area is also shown. Some 4800 events are listed, representing all known epicenter locations plus local earthquakes (<math>\Delta \geq 1000</math> km) <math>M_s \geq 3.0</math>, which were recorded. Computed and published magnitude data are included in the lists. <del>TOP</del></p> <p>delta</p>		

DD FORM 1 JAN 64 1473

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14. KEY WORDS	LINK A		LINK B		LINK C	
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